J-PARC

ANNUAL REPORT 2011

Japan Proton Accelerator Research Complex

J-PARC Annual Report 2011

Contents

Preface

Although the timing of this Annual Report is extremely late and the contents may be outdated, I feel nevertheless that it would be very useful and important to publish this 2011 Report, in order to keep it as a record of the J-PARC activities.

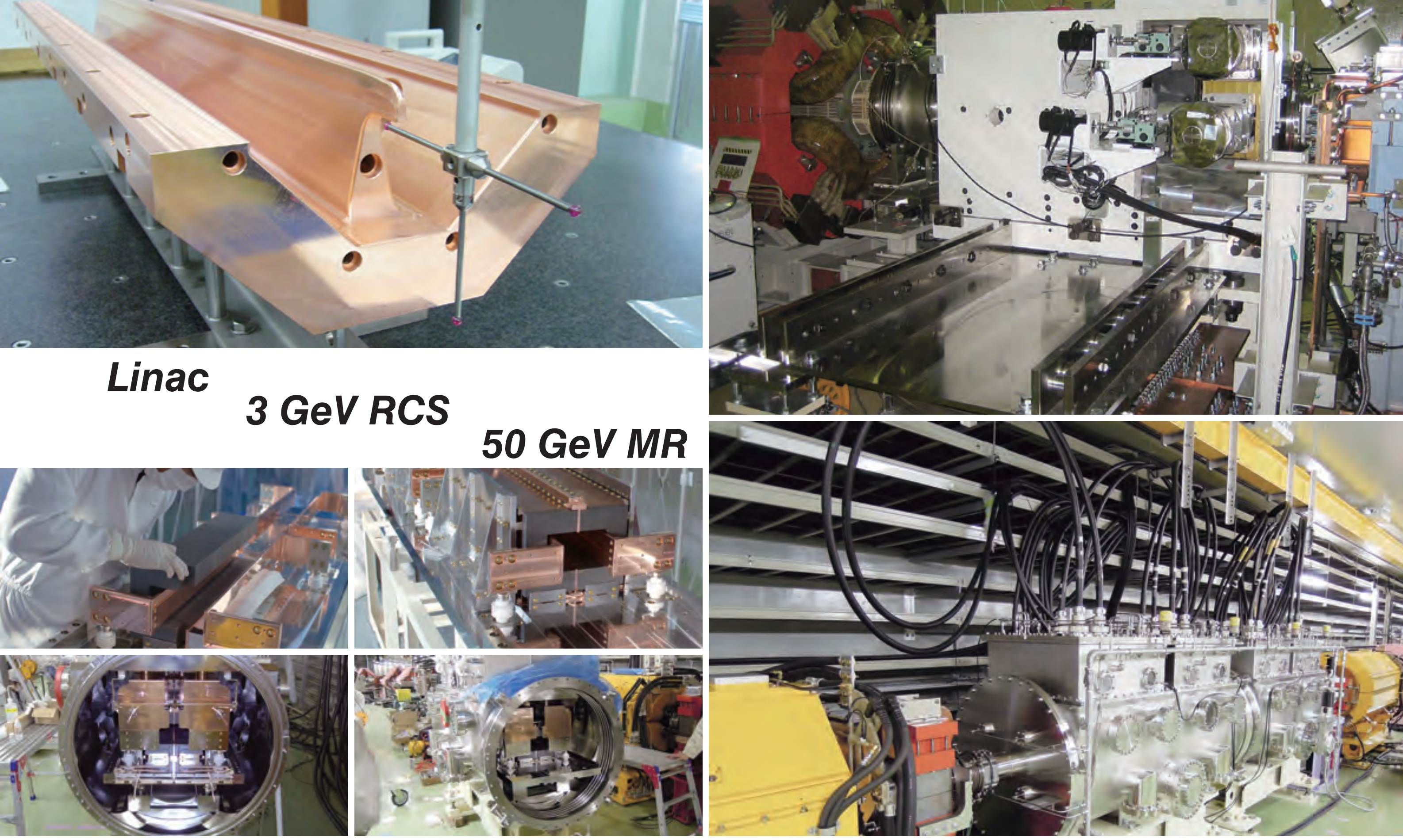
In 2011 the major event at the J-PARC facility was the recovery from the damage caused by the March earthquake. At the time when this earthquake occurred, I thought that it will be almost impossible to resume operations within a year. Roads were winding like wet candies; many electric power supplies and water supplies torn down; accelerator magnets and shielding concretes plus irons moved significantly; and some adjunct facility buildings inclined. In addition, water and electricity were not available for the first few weeks.

Nevertheless, by carefully examining all the damages, we created a schedule of recovery to the original shape within 9 months, to be completed by the end of the year. Our people worked very hard, day and night, and finally by December 9th of 2011 all the elements were recovered back and the J-PARC was able to restart data acquisition with users from the beginning of 2012.

I felt strongly that this recovery work could be accomplished because of the true and nice collaboration among all J-PARC members and their hard work. Although late, making this record public would show genuine appreciation not only for the funding agencies, the two parent institutions (KEK and JAEA) and all others who helped us, but also for our team members working at J-PARC.

Since the restart, the J-PARC operations increased in intensity and provided beams for users in a rather smooth way in 2012. The use of these beams allowed extensive data collection, which made that period of our work really successful.

Shoji Nagamiya
(Director in 2011)



Accelerators

Overview

In the fiscal year of 2010, the proton beam power had been successfully ramped up to 200 kW, 145 kW, and 3.5 kW at 3 GeV, 30 GeV fast extraction (FX) and 30 GeV slow extraction (SX), respectively. J-PARC, however, was severely damaged by the earthquake on March 11th and the beam was shut down. The recovery work proceeded and thanks to the great efforts of staff members and the help of the support personnel, the accelerator restarted beam commissioning in December 2011.

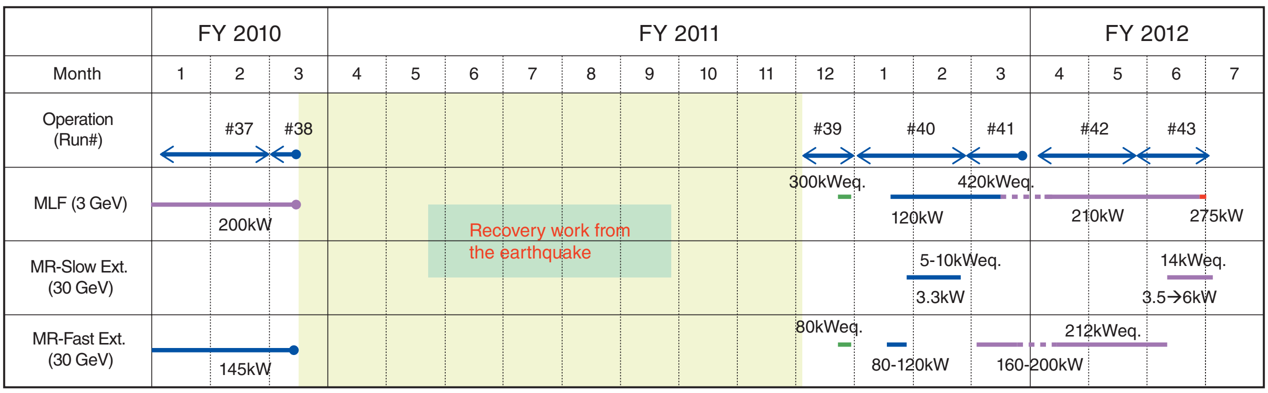
The accelerator status as of fiscal year (FY) 2011, which also includes part of FY 2010 and 2012 is summarized in Figure 1. The main topics related to the beam operation are as follows,

(1) The restoration work was accomplished on schedule and the linac beam tuning started on December 9th, 2011. The linac beam was injected into the RCS on the 17th, followed by the 3 GeV beam injection to the MLF and the MR on the 22nd. The MR delivered the beam to the neutrino beam line on the 24th.
(2) We had delivered beam to users for about 2 months in FY 2011.
(3) User run of RCS for MLF was started at 100 kW, and the power was increased to 200 kW. We demonstrated 275 kW delivery for about 3 days, which was a preparatory operation for further power up.
(4) We demonstrated 300 kW and 420 kW (equivalent beam) for MLF and beam loss data were compared with those before the earthquake.
(5) User run of MR-FX was started at 80 kW, and the power was increased to 160 and then again to 200 kW.
(6) We demonstrated 212 kW for MR-FX.
(7) User run of MR-SX was started at 3.3 kW, and the power was increased to 6 kW. The extraction efficiency of 99.5% has been maintained for the Hadron users.
(8) We demonstrated 14 kW (equivalent beam) extraction for MR-SX.

The operation statistics and the trip time by system in FY 2011 are shown in Figure 2 and 3, respectively. The total operation time was 2,455 hours (including startup and conditioning) and the scheduled user time was 1,210 hours. The beam availability, however, was reduced to 73% due to the trouble of a klystron power supply of linac in March. The trip hours due to some linac components such as a Radio Frequency Quadrupole linac (RFQ) and Separated-type Drift Tube Linacs (SDTLs) are dominant. The causes are suspected to be vacuum related issues in these cavities. The number of trips is decreasing for the RFQ as the vacuum condition is getting better. And several vacuum improvement tasks at the SDTL cavities will be carried out during the summer shutdown of 2012.

The user operation is planned to take about 180 days in FY 2012 (April 2012 to March 2013). The operation time before the summer shut down (as of July 2nd) is 2,104 hours and the user time for the MLF, NU and HD are 1,646, 1,058 and 376 hours, respectively. We had no serious troubles and the beam availability has got back to 94% for MLF, 90% for NU, and 94% for HD.

The steady progress toward 1 MW of RCS and 0.75 MW of MR as well as the restoration work and operation has continued. The linac energy upgrade was postponed to 2013 and about six-month long-shutdown was scheduled. The R&D and construction for power upgrade components such as an ion source, an RFQ, accelerating cavities, power supply systems, collimator systems, etc. are proceeding.



eq. :Equivalent beam power (Single shot or short period demonstration)

Fig. 1.1. Run summary of FY 2011.

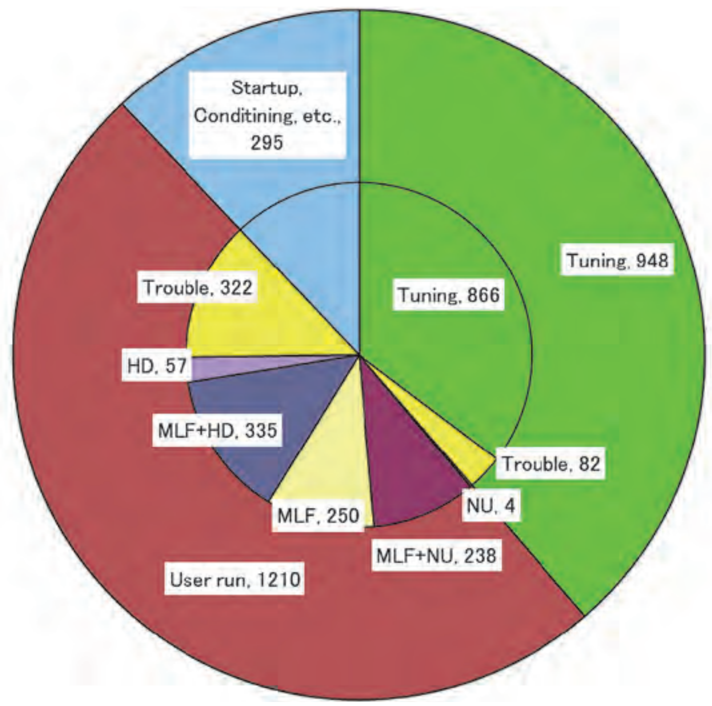


Fig. 1.2. Operation statistics in FY 2011. The total operation time is 2,455 hours.

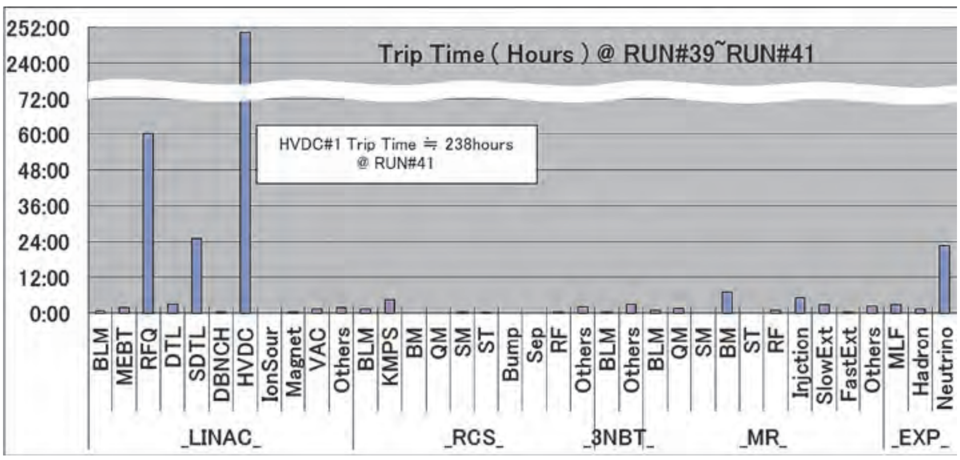


Fig. 1.3. Beam trip by system in FY 2011.

LINAC

The linac facility was extensively damaged by the huge earthquake in March 2011. The damage to the buildings on the ground was particularly severe. Due to the damage, most of the utilities became unavailable for months. The RF cavities and magnets themselves were not damaged seriously in the earthquake, vacuum leaks however occurred in ion source, MEBT1 and SDTL sections by destruction of vacuum port, beam monitors and bellows. We had many cracks in the accelerator tunnel, and groundwater leaked into the tunnel. The RF cavities were exposed to highly humid air for several weeks.

We performed realignment work for almost all accelerator components because the displacement of the components occurred due to the building's deformation. The realignment was carried out in line with a plan which emphasizes swift recovery of beam operation tolerating the deflection of the beam line at the exit of DTL.

Ignitrons in the klystron power supply did not turn on when triggered. That probably occurred because the igniter became wet through chopped liquid mercury stored at the cathode due to the strong quake. After the mercury was removed, the normal functions of the most of the ignitrons were restored.

After significant recovery efforts, we resumed the beam operation in December 2011 and the user operation in January 2012. The beam power from the linac reached 13.3 kW in March 2012, which was the same power as just before the earthquake. While we adopted deflections in the alignment axis in the realignment, so far we have observed no obvious effect on the beam quality.

The SDTL5 showed unstable behavior just before the operation restarted. It was impossible to input the design RF power into the cavity. In order to avoid the unstable behavior, we adopted 109% of the design amplitude in January 2012. However, the unstable region widened during the operation and forced us to increase the operating amplitude to 116% in March 2012. We think that the unstable behavior was caused by multipactor on the surface of the cavity wall at SDTL5B. We plan to investigate the cause precisely and take some measures during the summer maintenance period in 2012.

After resuming the user operation, we experienced beam losses which were not observed before the earthquake. Especially, we had severe beam losses and resultant high residual radiation dose in the beginning of the beam start up. By realignment of some beam ducts and optimization of the RF setting for SDTL cavities, we succeeded in reducing the beam loss to a level comparable to the one before the earthquake. We plan to continue the effort to mitigate further the beam loss in parallel with achieving higher beam power for the user operation.

On March 22, 2012, the linac operation stopped because of a problem with the klystron power supply. Its cause was a diode module breakdown in the high voltage transformation unit. Finally, we replaced the transformation unit and restarted the user operation on April 8. Because the user operation was stopped for more than two weeks by this problem, the operation schedule in the FY 2012 was modified to reduce this influence.

The ion source is supplying the beam without serious aftereffects from the earthquake. The results of recent beam runs show that the ion source is capable of continuous operation for approximately 1,200 hours with beam current of 17 mA. For another attempt to enhance the ion source availability, we tried to decrease the required time for routine maintenance. By shortening the duration of ion source vacuuming from 20 to 5 hours, the

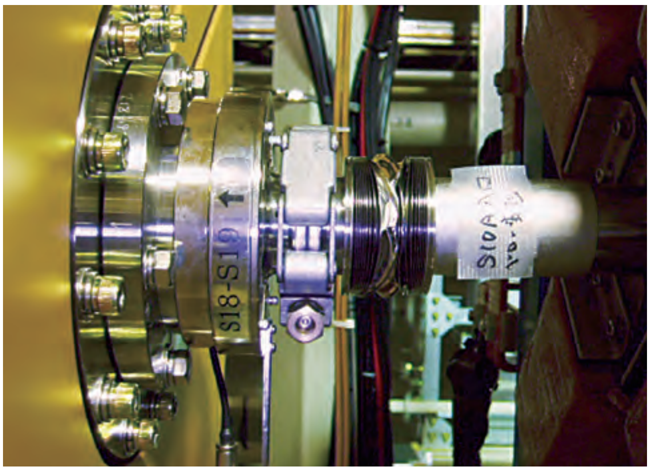


Fig. 2.1. Bellows distortion due to the earthquake.

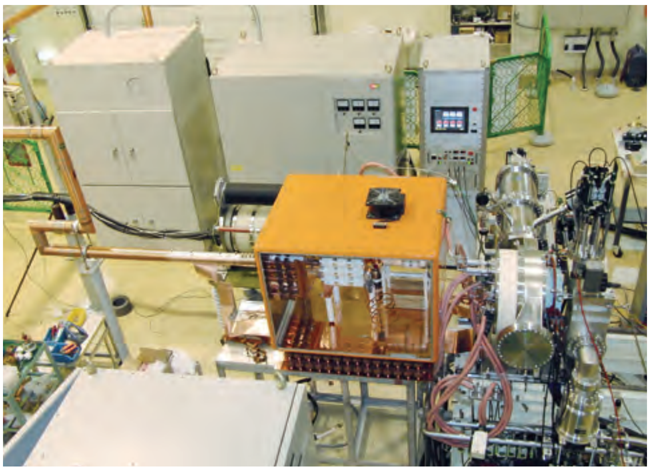


Fig. 2.2. Test stand of RF-driven negative ion source.

maintenance was completed within 24 hours without any beam performance degradation of the ion source.

A linac power upgrade program is now in progress. We started a full-scale development of a cesium seeded RF-driven negative hydrogen ion source. The ion source extracted a beam of more than 60 mA with a duty factor of 2.5%, which satisfies the requirements of the program. A new RFQ for 50 mA acceleration is under construction on the basis of a RFQ fabrication process, which is being built as a backup for the present RFQ. The mass production of the Annular-ring Coupled Structure linac (ACS) modules and the installation of 972 MHz RF sources system have been almost completed. All ACS modules will be installed in the tunnel in the summer of 2013.

RCS

The accelerator components of the RCS are installed in the main tunnel on the second basement floor; there is also a sub-tunnel where the power supply cables and cooling water pipes are installed. Many high-power devices, such as chilling refrigerators, cooling towers, capacitors, transformers, rectifiers, power distribution boards, and so on, are located in an outdoor yard, which surrounds the building. After the earthquake in March 2011, the yard subsided from 30 cm to 1 m in many places, so the high-voltage distribution boards were greatly inclined, and the transmission busbars were damaged. Therefore, the power outage had to be maintained until the repairs to the equipment were completed. The accelerator components in the yard also suffered serious damages. Many bases for the capacitors and transformers necessary for the resonant power supply and rectifiers for the RF cavities were inclined. In addition, hollow spaces emerged at many points under the bases of these devices. The cable trays installed along the building and all four cooling towers for the water system were damaged. An investigation of the specific damage to the accelerator components was conducted in two steps during the power outage. First, a visual inspection of the components in the tunnel was carried out using a diesel generator to produce the necessary light. Then, with access to electricity from a single-power generation device that suffered little damage, a low power inspection of the vacuum pumping system, the diagnostics system, etc. was completed.

During the restoration of the outdoor yard and the high-voltage electric boards, a complete power outage was necessary from mid-June until the end of August, as shown in Fig. 1. Once the electric power was started again in September, the restoration of the cooling water system was limited and a detailed check of the high-power components commenced.

It was also concluded that no serious damage occurred to the equipment/instrumentation in the RCS tunnel. The position and rotation errors for all the equipment/instrumentation based on magnets, including the RF cavities and the beam position monitors, were precisely measured using a laser tracker. The data are summarized in Table 1. The alignment errors indicate the difference from the reference position. Position errors for the horizontal and vertical planes cause closed orbit distortion, and thus reduce the physical aperture for the beam. To reduce this effect, it is necessary to correct the closed orbit distortion using steering magnets. The position errors for the longitudinal plane cause phase advance distortion and the rotation errors for the transverse plane enhance the linear coupling resonance. Because it was found by simulation that the closed orbit distortion could be corrected with correction magnets, and the effects of the longitudinal misalignment and rotation error were small, it was decided that the realignment would be performed during the 2013 summer shutdown period [1].

The beam commissioning of the RCS resumed on December 17th 2011. It was found that almost no beam losses were registered from injection through extraction in the case of the 300 kW equivalent beam extracted for the beam dump located in the beam transport line from the RCS to the neutron production target. In addition, the beam loss at the beam transport line from the RCS to the MR was nearly the same as it was before the earthquake in the case of the 300 kW equivalent beam. From these experimental data, which were consistent with the beam simulation results, it was concluded that the realignment of the RCS components was not necessary in the case of the 300 kW beam operation. Thus, the 300 kW beam was prepared for delivery to the MLF, and the users resumed the operations in January 2012. Therefore, both the 120 kW beam power for the MLF and the 300 kW equivalent beam for the MR were back online on schedule. The beam power for the MLF was increased to 200 kW in mid-March and the user operation has been performed with high stability. The beam power for the user operation of the MLF could be increased to 275 kW from the 29th of June 2012.

Figure 2 shows the beam loss monitor signal in the entire RCS before and after the earthquake for the 300 kW and 420 kW-equivalent beams. The re-alignment of the RCS components was not necessary for the 300 kW beam operation. For the 420 kW-equivalent beam, however, the beam loss after the earthquake was 2 times larger than before the earthquake. The total particle loss after the earthquake was 0.8%. The re-alignment, which is scheduled for the 2013 shutdown period, is required for the MLF user operation at beam powers higher than 420 kW.

While the repair work was being completed, this opportunity was used to complete some upgrades to the system to realize a 400 MeV injection and a beam power of 1 MW [2]. Specifically, the downstream beam losses due to the charge exchange foil were localized by installing a new collimator at the injection area. A residual activation level of >5 mSv/h was observed for this area in the case of 220 kW for the beam operating for 2 weeks. The residual activation was measured on the chamber surface 4 hours after the user operation was completed. This loss, which is proportional to the number of foil hits, is one of the biggest issues that must be addressed if a higher beam power for the RCS is to be realized. Based on beam studies and simulations, it was concluded that large angle events with Coulomb scattering create a hot spot downstream of the foil. Therefore, the number of foil hits should be reduced by using a transverse painting injection and optimizing the foil size. These treatments for the beam loss have already been implemented, but it is impossible to reduce this loss to zero. Since the loss leads to a high residual activation, a new collimator system was installed downstream of the foil to localize the uncontrolled beam losses. As a result, the residual activation of this area was reduced by one order of magnitude creating the possibility of a higher beam power for the RCS.

Improvements have also been carried out for the 400MeV injection and beam loss reduction. To achieve a 400 MeV injection, a total of five power supplies, one for the injection bump magnet and four for the paint bump magnet, must be improved. A new power supply for the paint bump magnet has been successfully installed and is available for the user operation [3]. The other four power supplies are under construction.

Table 3.1. Position and rotation alignment errors measured with a laser tracker after the earthquake.

Item	Alignment Error
Position (horizontal)	−4 – +6 mm
Position (vertical)	−3 – +1 mm
Position (longitudinal)	−3 – +3 mm
Rotation (transverse)	−0.4 – +0.2 mrad

Fig. 3.1. Restoration work at the RCS facility. Left: Re-paved road. Right: Straightened capacitors and transformers on re-leveled bases.

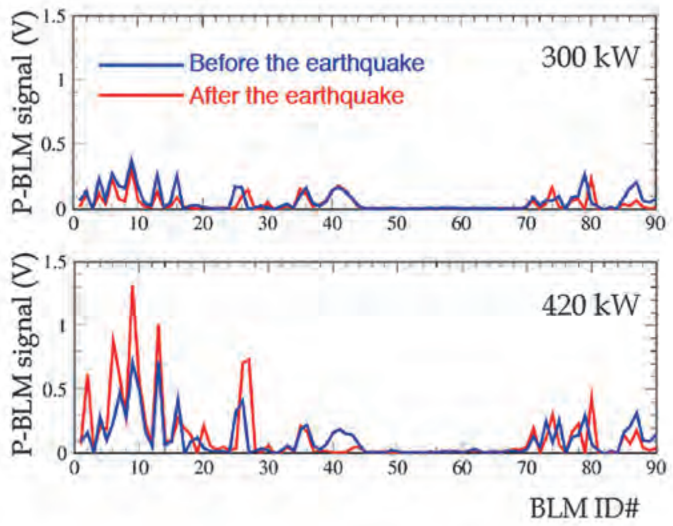


Fig. 3.2. Beam loss distribution of the RCS in the case of the 300 kW and 420 kW-equivalent beams. The blue line shows the beam loss distribution before the earthquake and the red line - after the earthquake.

References

[1] N. Tani *et al*., IPAC12 WEPPP085 (2012).

[2] N. Hayashi *et al*., IPAC12 THPPP081 (2012).

[3] T. Takayanagi *et al*., IPAC12 THPPD051 (2012).

MR

In the MR tunnel, many cracks were found, with groundwater leaking from many of them just after the earthquake. The groundwater poured onto the magnets and vacuum ducts of the MR (Fig. 4.1). Urethane and high-molecular compound were used to fill in the cracks to stop the water leaks.

Figure 4.2 shows an expansion joint located in a sub-tunnel, which connects to Escape Building #2 (E2). The sub-tunnel to E2 subsided, and a level difference of about 50 mm appeared in the expansion joint. The rubber joint absorbed the level distortion. There are 43 expansion joints in the entire J-PARC facility. Among them, 7 expansion joints have level differences larger than 50 mm after the earthquake. Repair or reinforcement of the expansion joints is planned for the 2012 shutdown period or later.

The vacuum pressure in the MR measured on March 25 was 230 Pa, 3 orders worse than the normal pressure build-up after switching off the pump system for 2 weeks. Leak testing performed on April 1 detected a vacuum leak larger than 10^{-4} Pa m^3 s^{-1} at the flanges between the fast extraction septa. The vacuum pressure data logged in the archive system showed that the leak occurred just after the earthquake. Fortunately, there were no large vacuum leaks in the other parts of the MR and no seriously damaged vacuum ducts.

Figure 4.3 shows the magnet positions measured in April and May 2011 using a laser tracker system. The maximum displacements after the earthquake were larger than ±15 mm horizontally and 10 mm peak-to-peak vertically. From the end of August to the beginning of December 2011, we re-aligned all the magnets and most of the monitors in the ring.

During the 9-month shutdown period, we also made various improvements in the operational stability and beam intensity of the MR as follows:

(1) Installation of additional shields for the ring collimators:

Loss power capacity of the MR collimator section will be increased from 0.45 kW to 2 kW by installing additional shields and absorbers during the 2011 shutdown, and an additional set of collimators during the 2012 shutdown. Figure 4.4 shows the iron shield walls installed on both sides of the MR collimator in the autumn of 2011. They are mounted on a linear motion guide rail for easy maintenance.

(2) Replacement of the injection kicker system:

The traveling-wave-type injection kickers used until March 2011 had problems of discharging in the vacuum chamber and high beam-coupling impedance. Figure 4.5 shows the newly installed kicker magnets. The new kicker has a simple lumped-constant-type structure, a well-shaping pulse form, and lower beam-coupling impedance.

(3) Installation of the 7th and 8th RF systems:

We added 2 RF systems to obtain accelerating voltages larger than 200 kV for higher beam intensity operation. Beams can also be operated as a second-harmonic system by changing the resonance frequency to manipulate the longitudinal bunch form and reduce the effect of the space-charge force.

(4) Modification of the RF cooling water system:

A new cooling water system for the RF cavities was installed in order to separate it from the cooling water system for the magnets.

(5) Installation of a collimator in the SX straight section:

The new collimator system was installed to reduce the residual radioactivity on a quadrupole magnet located downstream from the electrostatic septum (ESS). Figure 4.6 shows the SX collimator installed in the SX straight section. The collimator has movable tungsten alloy jaws to cut the beam halo in the horizontal and vertical directions.

(6) Installation of skew quadrupoles and octupoles:

Four skew quadrupoles were installed to correct the linear coupling resonance and three octupoles to suppress the instability.

The user operation of the MR started in January 2012. The MR was operated in the SX mode and delivered the beam to the hadron experimental hall from January 28 to February 21 and from June 9 to July 2. The cycle time of the SX operation is 6 s. After 1.9 s acceleration, the circulating beam is slowly extracted for ~2 s. The delivered beam power was 3 – 6 kW and the extraction efficiency of the SX is ~99.5% during the user operation. As reported in the last annual report, the most serious issue to be solved in the SX operation was a spike-like time structure in the extracted beam. The structure is brought by fluctuation of the betatron tune which is caused by current ripples of $\Delta I/I \approx 10^{-4}$ for the main magnet power supplies. The duty factor, an index to evaluate the quality of the time structure of the extracted beam, was ~17% in the autumn of 2010 run. After the recovery from the earthquake, we switched on a transverse RF system, which feeds an RF field with a narrow band around the frequency of the betatron oscillation to a strip-line kicker. This increases the amplitude of the oscillation and pushes the beam to the third-order resonance for extraction. In order to suppress the vacuum pressure rise due to the multipactoring effect in the strip-line kicker, 12 sets of solenoid coils were installed on the beam duct of the strip-line kicker during the shutdown period. The duty factor during user operation after February 2012 was improved from 17% to 30% using the transverse RF system. Figure 4.7 and 4.8 show the time dependence of the extraction efficiency and the duty factor during the 6-kW user operation, respectively. The spill length is also plotted in Fig. 4.8. The efficiency, duty factor, and spill length are stably kept during the operation.

Before the 2012 summer shutdown, the maximum extracted intensity of 1.7×10^{13} ppp (particle per pulse) was demonstrated. It corresponds to the beam power of 14 kW. The extraction efficiency and duty factor were 99.5% and 33.7%, respectively. After the 2012 shutdown, a user operation with beam power larger than 10 kW will be started.

The MR was operated in the FX mode and delivered the beam to the T2K experiment from March 5 to June 9, 2012, including 2-week shutdown due to the trouble on the klystron power supply of the linac. Before the earthquake, the accelerating time from 3 GeV to 30 GeV was ~1.9 s, and the shortest total cycle time was 3.04 s. The 2 RF systems added during the 2011 shutdown period made it possible to achieve faster accelerating times as short as 1.4 s. The total cycle times were set to 2.92 s in the operation in March and 2.56 s in the operation from April to June, 2012. For stable operation with a large proton number per pulse, the bunch-by-bunch feedback system was adopted to suppress coherent oscillation of betatron sideband in the routine user operation. The system is necessary for a user operation with beam intensity larger than ~5×10^{13} ppp. In addition, since June a multi-harmonic RF feedforward system for beam-loading compensation has been switched on in the routine operation. The maximum delivered beam intensity for the T2K experiment was 200 kW (~1.1×10^{14} ppp) after the recovery from the earthquake. The MR surpassed its own world record of extracted number of particles per pulse in synchrotrons.

Figure 4.9 shows the history of delivered number of protons beam to the T2K experiment until the 2012 summer shutdown. The T2K experiment has started collecting physics data from January 2010. The total number of delivered 3.1×10^{20} protons on target (POT) is three times larger than that of the K2K experiment, the former generation long-baseline neutrino oscillation experiment, which delivered the beam by the 12-GeV KEK-PS for four years. By using the data, the T2K group observed eleven candidate events of electron neutrino appearance.

Fig. 4.1. Groundwater leaking in the MR tunnel.

Fig. 4.2. Expansion joint in the sub-tunnel to building E2.

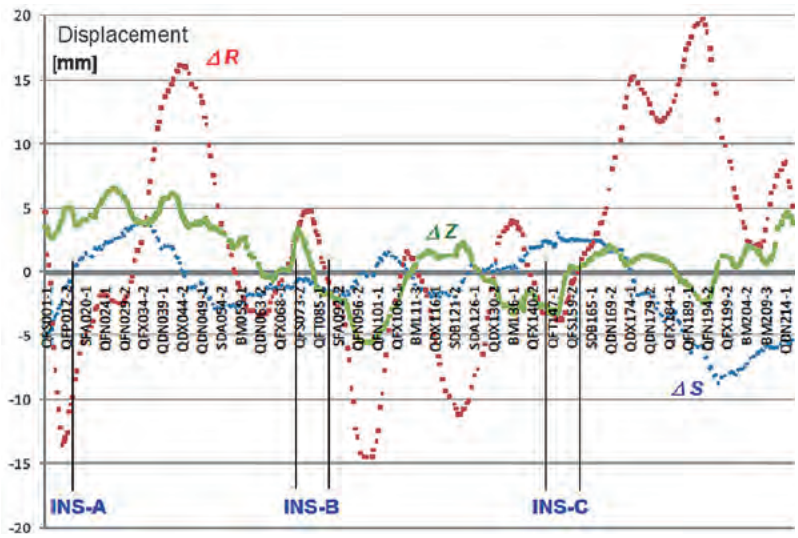


Fig. 4.3. Measured displacements of MR magnets after the earthquake in the horizontal (R), vertical (Z) and longitudinal (S) directions. Ins-A, B, and C are straight sections for "beam injection", "slow extraction", and "RF and fast extraction", respectively.

Fig. 4.4. Newly installed iron shields in the MR collimator section.

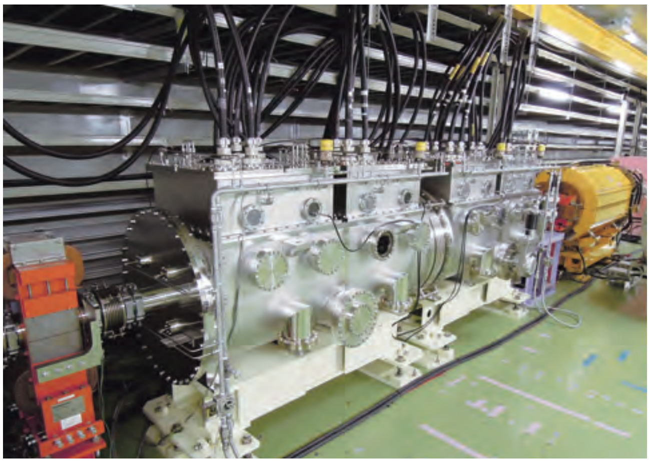


Fig. 4.5. Newly developed lumped-constant-type injection kickers.

Fig. 4.6. New collimator system installed in the SX straight section.

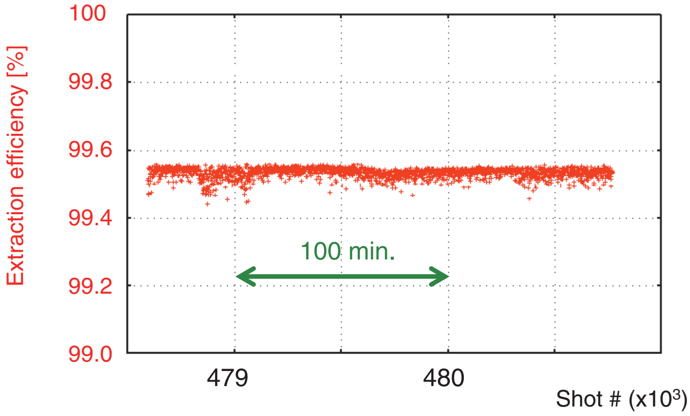


Fig. 4.7. Time dependence of the extraction efficiency during the 6-kW user operation.

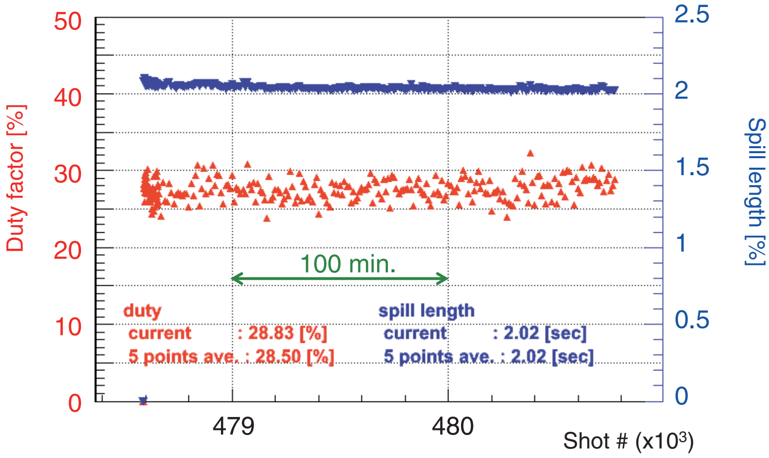


Fig. 4.8. Time dependence of the duty factor and spill length during the 6-kW user operation.

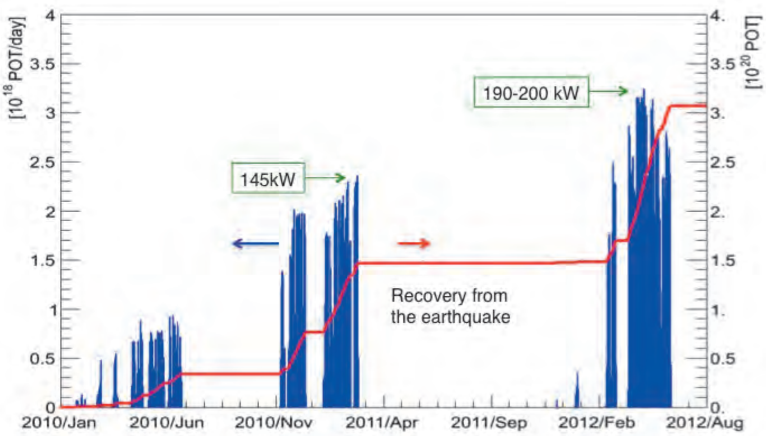


Fig. 4.9. History of the number of protons delivered to the T2K experiment.

Materials and Life Science Experimental Facility

Overview of the damage caused by the earthquake in March 2011

The main building of the Materials and Life Science Experimental Facility (MLF) withstood the very large earthquake, which occurred in March 2011. The damage to the components of the building was relatively limited and most of them looked sound. However, a vacuum break occurred in the aluminum neutron beam ducts of the neutron beam shutter blocks. The mercury target trolley installed at the downstream of the proton beamline, which weighs about 300 tons, was moved back by the strong vibration, thereby stretching the bellows seal system of the target, designed to prevent a helium gas leakage.

On the other hand, many outside facilities, such as the plumbing system, the liquid nitrogen storage tanks, and a helium tank, surrounding the MLF building, suffered severe damage due to ground subsidence .

The damage in the tunnel of the proton beam transport line affected mostly the downstream part connected to the MLF building. It appeared that the tunnel had subsided unevenly and tilted slightly toward the ocean.

The damages on three extensions to the MLF building for long beamlines were serious. The subsidence of the west extension for BL18 (SENJU), BL19 (TAKUMI) and BL20 (iMATERIA) reached up to 14 cm. The east 50 m extension for BL08 (S-HRPD) sank down 9 cm and moved 3 cm toward the north. The new east extension for BL09 also sank down and tilted 1/400. Because of the subsidence of the extensions, the supermirror guide tubes and shielding were partly broken at the boundaries between the buildings.

The Muon Science Facility (MUSE) in the MLF also suffered damage from the earthquake. It was found that some water pipes and cables of an air circulation system for the proton beam tunnel were damaged around the muon target since the wall was about to fall down. An air-sealing hatch preventing the flow of activated air between the primary proton beam tunnel (M2 tunnel) and the MUSE area had also been seriously damaged.

Resuming the user operation

The recovery works from the major damage by the earthquake were almost completed by the end of November 2011 as scheduled, and an injection of a 3 GeV proton beam to the neutron target was resumed on December 22, 2011.

From January 24, 2012, neutron beams were supplied to most of the neutron instruments that were operated before the earthquake (BL01, BL03, BL04, BL05, BL10, BL11, BL12, BL14, BL15, BL16, BL20 and BL21). Two instruments, BL19 and BL08, in the extension buildings should wait to resume their operations until March 1 and 23, respectively, due to the severe damage to the buildings. The permission to operate the new instruments (BL02, BL09, BL17, BL18) was given after instrument inspection on January 26 and February 1.

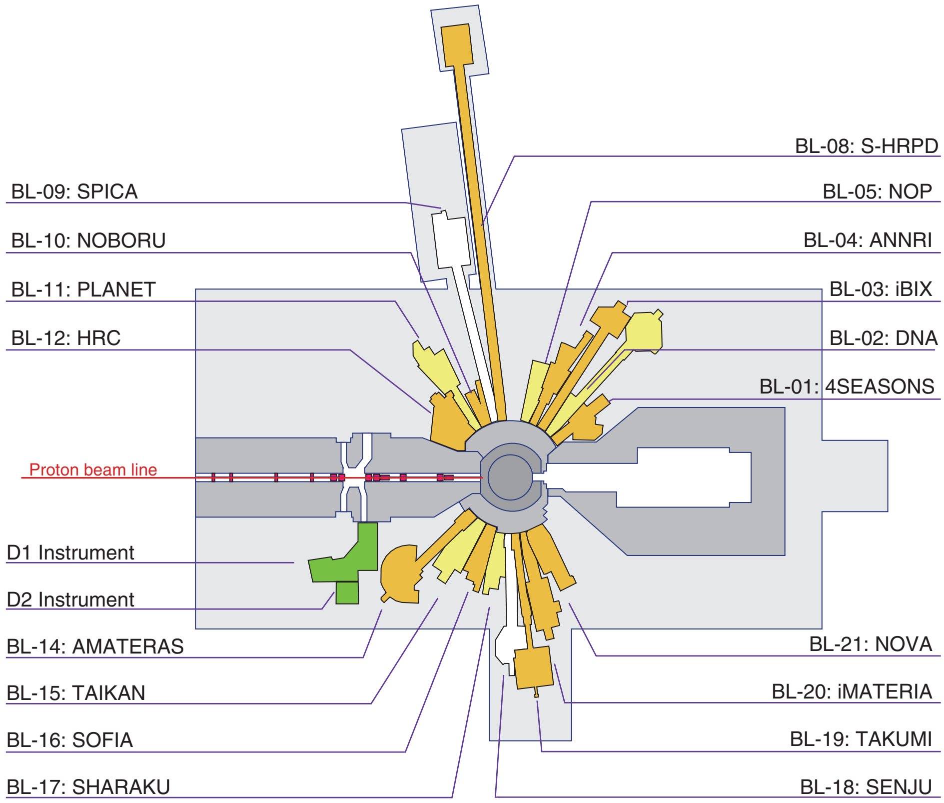
The muon target received a proton beam and introduced a muon beam to the MUSE area on January 24.

Experiments of the 36 neutron proposals out of 166 approved proposals (115 general-use, 44 project-use and 7 instrument group use) for the 2011A period were carried out at overseas neutron facilities (SNS, LANSCE, ISIS, ILL and HANARO), and two proposals were completed at SPring-8. Seven muon experiments out of 16 proposals (14 general-use and 2 project-use) were carried out at RAL by courtesy of RIKEN. In the 2011B period, 19 neutron proposals out of 56 approved general-use proposals and 5 muon proposals out of 7 approved general-use proposals were carried out after the user program resumed.

Table 1. Beam statistics for the MLF user program in Japan fiscal year 2011.

No. of run cycle	Nominal beam power (kw)	Duration	Scheduled time(*) (h)	Availability (%)
#39		Only for target study	0	
#40	120	11pm on 01/14/2012 – 07am on 02/22/2012	549	95.8%
#41	120	11pm on 03/5/2012 – 12pm on 03/31/2012	547	58.9%

(*) Note: The scheduled time excludes the duration allocated for the purpose of the beam study for the 3-GeV proton beam transport line and/or the mercury target in MLF.



Neutron Instruments

BL	Name of Instruments	Moderator	Status
BL01	**4SEASONS:** 4D Space Access Neutron Spectrometer	Coupled	in use
BL02	**DNA:** Biomolecular Dynamics Spectrometer	Coupled	commissioning
BL03	**iBIX:** IBARAKI Biological Crystal Diffractometer	Coupled	in use
BL04	**ANNRI:** Accurate Neutron-Nucleus Reaction measurement Instrument	Coupled	in use
BL05	**NOP:** Neutron Optics and Fundamental Physics	Coupled	commissioning
BL06	**VIN ROSE:** VIllage of Neutron ResOnance Spin Echo spectrometers	Coupled	planning
BL08	**S-HRPD:** Super High Resolution Powder Diffractometer	Poisoned	in use
BL09	**SPICA:** Special Environment Neutron Powder Diffractometer	Poisoned	under construction
BL10	**NOBORU:** NeutrOn Beam-line for Observation & Research Use	Decoupled	in use
BL11	**PLANET:** High Pressure Neutron Diffractometer	Decoupled	commissioning
BL12	**HRC:** High Resolution Chopper Spectrometer	Decoupled	in use
BL14	**AMATERAS:** Cold-Neutron Disk-Chopper Spectrometer	Coupled	in use
BL15	**TAIKAN:** Smaller-Angle Neutron Scattering Instrument	Coupled	commissioning
BL16	**SOFIA:** Soft Interface Analyzer	Coupled	in use
BL17	**SHARAKU:** Polarized Neutron Reflectometer with Vertical Sample Geometry	Coupled	commissioning
BL18	**SENJU:** Single Crystal Neutron Diffractometer under Extreme Condition	Poisoned	under construction
BL19	**TAKUMI:** Engineering Materials Diffractometer	Poisoned	in use
BL20	**iMATERIA:** IBARAKI Materials Design Diffractometer	Poisoned	in use
BL21	**NOVA:** High Intensity Total Diffractometer	Decoupled	in use

Muon Instruments

BL	Name of Instruments	Status
D1	**D1 Instrument**	in use
D2	**D2 Instrument**	in use

Fig. 1. Status of the neutron and muon instruments at the MLF as of March, 2012.

Neutron Source

Recovery works

The first mercury target damaged by the earthquake was replaced with a new target in November 2011. Figure 2 shows the first target with elongated bellows seal. The new target vessel is equipped with a bubbler for mitigating the pitting damage caused by the pressure waves in mercury. This was our first time to replace a target vessel, i.e. a heavy and large radioactive component by a remote-handling system since the beam operation was started at the MLF. The replacement was successfully completed in 7 days just in the same way as the handling test under the cold condition. Unfortunately, the installation of the helium gas supply system, which supplies compressed helium gas to the bubbler, could not be completed in time for resuming the beam operation due to a trouble in a helium compressor. However, the mercury circulation operation of the target system started again in December 2011 without using the bubbler.

On December 22, the first proton beam after the earthquake was successfully delivered to the mercury target. On December 23, a neutron beam was introduced for the first time to the NOBORU instrument (BL10) under a 1 Hz operation. A neutron beam profile was measured with an image plate (Fig. 3). The neutron flux intensity was measured with the gold foil activation method and a neutron energy spectrum was measured with a He-3 monitor counter (Fig. 4). These measurements show that the earthquake did not seriously affect the neutron beam characteristics.

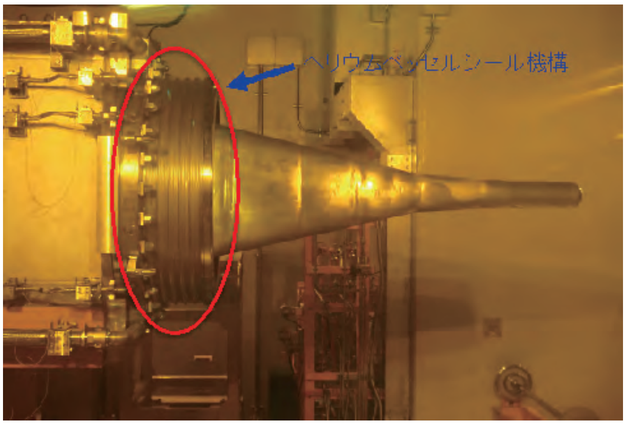


Fig. 2. The first target with elongated seal bellows.

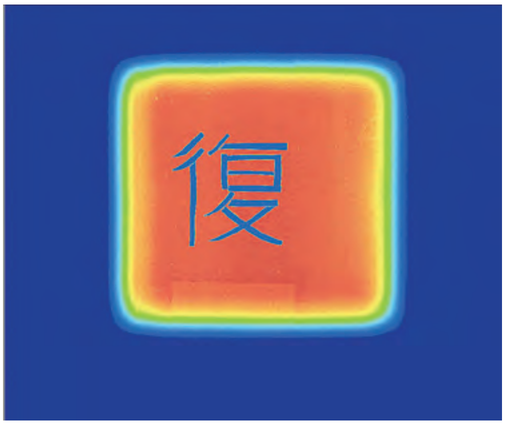


Fig. 3. Neutron beam profile measured with image plate. The displayed character means "recovery" in Japanese.

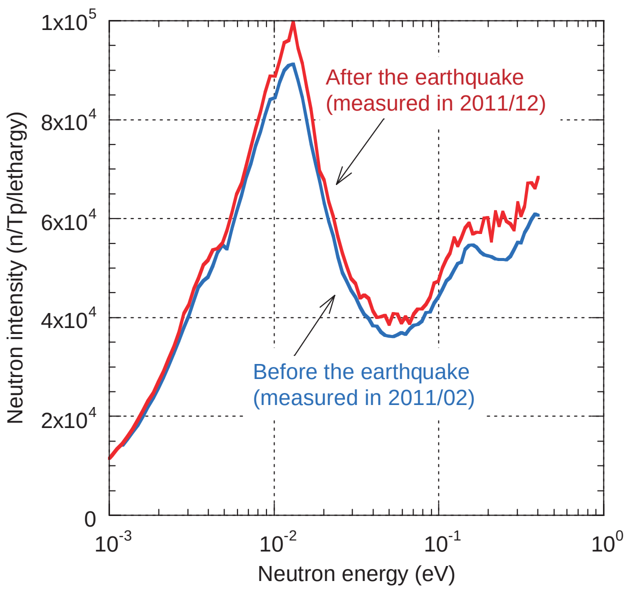


Fig. 4. Measured neutron flux spectra before and after the earthquake.

Investigation of the pitting damage in the first target

Before the target vessel replacement, disk specimens with 50 mm in diameter were cut out in order to assess the effects of collisions by strong pulsed-proton beams and investigate the pitting damage on the beam window of the target vessel. Based on observations with a camera, some pitting damage was documented at the center and the both sides of the window. Many pitting damages were also scattered over the specimens. Furthermore, through observation of the replicated surface of the specimen by a laser microscope we estimated that the localized pit was about 120 μm deep. We concluded that the homogeneous erosion of the surface of the specimen reached a depth of 250 μm. The accumulated beam power on this target vessel was 475 MWh since the start of the first beam injection in May 2008.

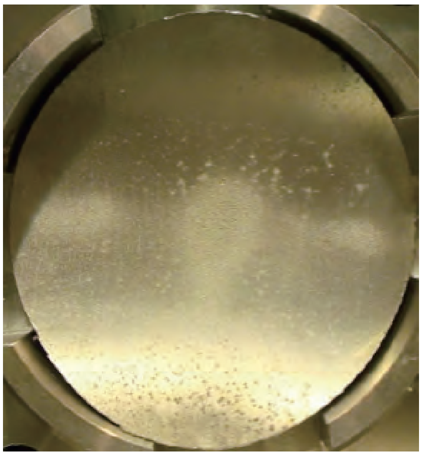


Fig. 5. The disk specimen cut from the target vessel.

Neutron Science

Repair of the pre-shielding blocks for the neutron beamlines

The pre-shielding, which was installed in the upper stream of each neutron beamline (7-12 m from the center of the neutron target/moderators), was displaced by the earthquake. Because the pre-shielding was composed of piling shielding blocks with a tunnel structure of 1 m in width and 2 m in height, the upper blocks nearly fell down (See. Fig.6). Fortunately, no blocks hit the beamline components, which were installed in the tunnel structure, but most of them were in unstable positions.

At the beginning of the repairs, we installed steel supports to prevent secondary accidents and maintain the safety of workers and components. Then, we removed all shielding blocks, and re-piled them with inserting special spacers and/or additional plates. The total numbers of re-piled side shielding and top blocks were 280 and 248 respectively, and the total weight was 2,772 tons.

The repairs of the pre-shielding were implemented by organizing day and night working shifts, and so the work was completed in approximately three months by mid-September, 2011.

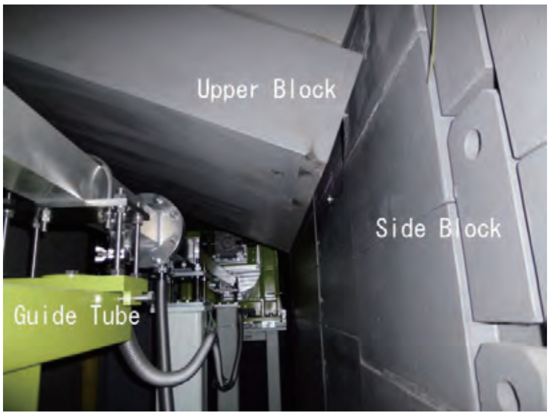


Fig. 6. Upper block in a critical state.

Recovery works of the extension building for BL08 and BL09

The extension building for BL08 and BL09, which was attached to the east side of the MLF building, sank 8.8 cm at an expansion joint and 2.77 cm at a sample position as a consequence from the earthquake, because it was built without concrete piles. Consequently, some iron shielding blocks of the beamlines collapsed and a few guide tubes near the joint part between two buildings were destroyed. In addition, the sample position was displaced 1.25 cm to the north and 3.39 cm to the east (See. Fig.7). Since curved guide tubes were equipped in the extension building for BL08, the adjustment work of the sample position and the guide tubes was not straightforward. To resolve the problem, we improved the guide tube support mechanism for BL08 so that it allowed us to adjust the guide tube positions by as much as 10 cm along vertical and horizontal directions. The iron shielding blocks were also raised several centimeters instead of repairing the subsidence and displacement of the building itself.

All the temporary restoration was completed by the end of March 2012 and the operation permission was granted on March 23 by the J-PARC radiation protection supervisor.

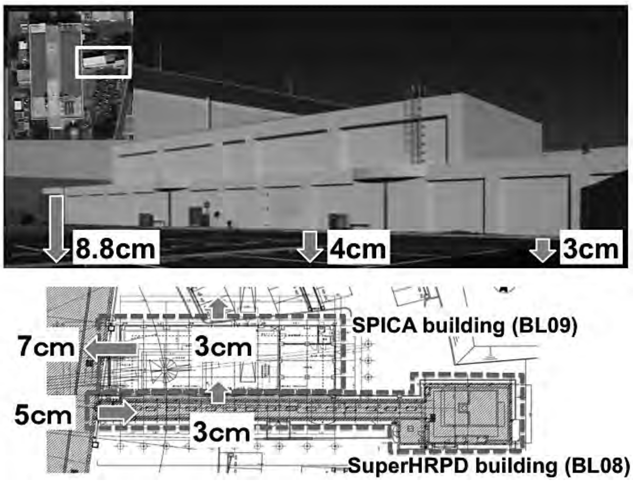


Fig. 7. The displacement and subsidence of two extension buildings.

Scientific topics

A New Solid Electrolyte $Li_{10}GeP_2S_{12}$ for Li-Ion Batteries (N. Kamaya, et al.)

From the viewpoint of improving the safety of the lithium-ion batteries, the non-flammable solid electrolytes have the promising potential to replace the currently used liquid organic electrolytes. Although the advantages of solid electrolytes are widely acknowledged, their low ionic conductivities prevent them from being used in practical applications. Recently a new lithium superionic conductor $Li_{10}GeP_2S_{12}$ exhibiting an extremely high lithium ion conductivity of $1.2 \times 10^{-2}\ \Omega^{-1}cm^{-1}$ was discovered.

The structure analysis was carried out using the high-resolution neutron powder diffractometer S-HRPD (BL08). The structure was found to be tetragonal (space group $P4_2/nmc$) with lattice parameters of a = b = 8.7177 Å and c = 12.6345 Å. Lithium ions at the 16h and 8f sites in LiS_4 tetrahedra are considered to participate in ionic conduction and form the 1D conduction pathways. These 16h and 8f sites were found to be occupied by 69 and 64 % of Li, respectively. The result indicates partial distribution of lithium ions on the conduction pathway, which is a common characteristic of the superionic conductors.

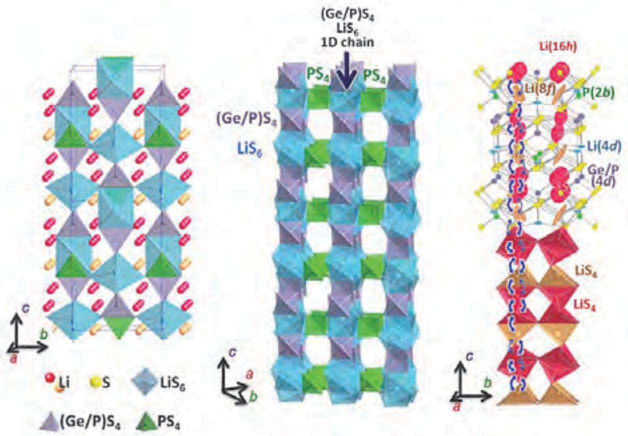


Fig. 8. (a) Crystal structure of $Li_{10}GeP_2S_{10}$. (b) Framework structure of $(Ge_{0.5}P_{0.5})S_4$ tetrahedra, LiS_6 octahedra and PS_4 tetrahedra. (c) 1D conduction pathways of lithium ions along the c axis. The zigzag conduction pathways are indicated.

Pulsed neutrons light up the hydrogen-bond network and the pH sensitivity in human transthyretin (T. Yokoyama, et al.)

Transthyretin (TTR) is a tetrameric human plasma protein composed of identical 127-residue subunits, each with a β-sheet structure. TTR plays a major role in the transport of thyroxine and retinol, the latter via the TTR-retinol binding protein complex. TTR composes the amyloid fibrils found in patients afflicted with either familial amyloidotic polyneuropathy (FAP) or senile systemic amyloidosis (SSA). It has been found that *in vitro* an acidic medium promotes TTR fibrillogenesis, and that the extent of amyloid fibril formation is enhanced for amyloidogenic mutant TTR.

In order to investigate the structural explanation for the pH-dependent effects and structural stability of TTR, time-of-flight neutron protein crystallography was performed using iBIX (BL03). Experimental results clearly showed that H88 is single protonated, which suggest that the full protonation of H88 by the acidic pH probably breaks this hydrogen-bond network and destabilizes both the tetramer and the dimer. The structural destabilization caused by the lowered pH can be accounted for by the full protonation of H88. This is the first crucial piece of information on the way to elucidate the atomic details of the amyloid fibril formation.

The neutron crystal structure including hydrogen atoms could be useful for *in-silico* drug screening in terms of calculation of the accurate binding free energy. The present study demonstrates that the neutron protein crystallography is a powerful method for studying hydrogen bonds and pH sensitivities in proteins.

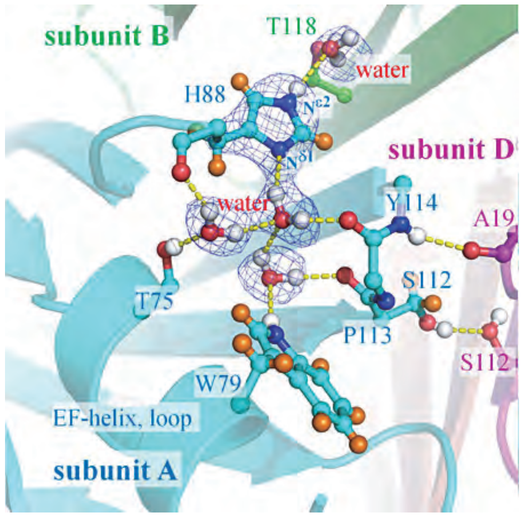


Fig. 9. The |Fo|-|Fc| difference neutron scattering length density map calculated omitting H88 and water molecules. The dashed yellow lines indicate the hydrogen bonds.

Magnetic Excitation Spectra of Superconducting $Ca_{10}Pt_4As_8(Fe_{1-x}Pt_xAs)_{10}$ (x~0.20) (M. Sato et al.)

The multiband nature of Fe-based superconductors is a significant characteristic that differentiates them from high-T_c Cu-oxides. Keeping that in mind, we have been working to find out whether the superconductivity in Fe pnictides displays a new pairing mechanism related to this multiband nature or to the orbital degrees of freedom. A number of papers have suggested that the magnetic mechanism similar to that of Cu-oxides is primarily important for the occurrence of the superconductivity of Fe-based systems (S_{+-} symmetry). On the other hand, if the orbital fluctuation mechanism, which may arise from the orbital degrees of freedom is important, we do not expect the sign reversal (S_{++} symmetry).

To investigate which symmetry, S_{+-} or S_{++}, is realized, inelastic neutron scattering measurements on Fe-based superconductor $Ca_{10}Pt_4As_8(Fe_{1-x}Pt_xAs)_{10}$ (x~0.20) were performed at 4SEASONS (BL01). The energy width of the peak of the χ'' ($\mathbf{Q}_M$, ΔE) curve is much larger even at $T<<T_c$ than the resolution width. If the symmetry is S_{+-}, the peak should be sharp. The experimental results are consistent with the nonexistence of the pair breaking effects by nonmagnetic impurities and seem to support the S_{++} symmetry.

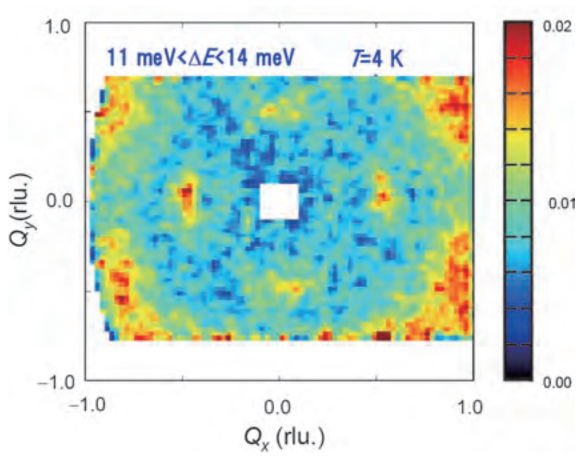


Fig. 10. Intensity map of the magnetic scattering in the a*-b* plane of $Ca_{10}Pt_4As_8(Fe_{1-x}Pt_xAs)_{10}$ (x~0.20).

Muon Science

Damage from the earthquake and recovery work

There was damage in some helium ducts, control cables, power cables, compressed air piping for a superconducting solenoid magnet and an on-line refrigerator system for D-line, due to ground subsidence up to 1.5 m outside the MLF building. A buffer tank for the He gas was also tilted by 2-3 degrees. In accordance with the high-pressure gas regulation, we had to replace all the helium ducts at the boundary. After the replacement, in December 2011, we eventually stabilized the operation of the superconducting solenoid magnet using the on-line refrigerator.

The M1 and M2 air circulation systems for a proton beam tunnel around the muon target were severely damaged. It appeared that the water ducts and control cables around an expansion joint between the MLF building and a proton beam transport line from 3-GeV RCS (3NBT) had to be removed and rebuilt. The repairs were completed in November 2011.

The components located in the M2 tunnel are a target chamber, six quadrupole magnets, four steering magnets, two sets of profile monitor assemblies, 29 sets of pillow-seal assemblies, and seven sets of duct assemblies. When the electric supply resumed after the earthquake, it turned out that the vacuum in a primary beam duct of the M2 line was broken and reached air-pressure level. We suspected a problem in the pillow-seals. After we did vacuum leak check for all pillow-seals, it appeared that the pillow-seals themselves were not damaged, but the tightness of a metal gate valve caused the leak.

An edge-cooled non-rotating graphite target has been adopted, the so called 'fixed target', because of the ease in handling during maintenance. In order to investigate the soundness of the graphite target assembly, any changes not only in the dimension but also in the heat conductivity were inspected by a remote handling system in a hot cell. Consequently, it turned out the assembly was sound and we would be able to use it continuously for at least another year.

Many anchor bolts (M24) were split off from the concrete shielding blocks due to the strong quake and several concrete shielding blocks themselves were broken or cracked. All the damaged blocks were temporarily repaired by a concrete manufacturer before November 2011.

Fig. 11. Damaged helium ducts for the on-line refrigerator at the boundary of the MLF building.

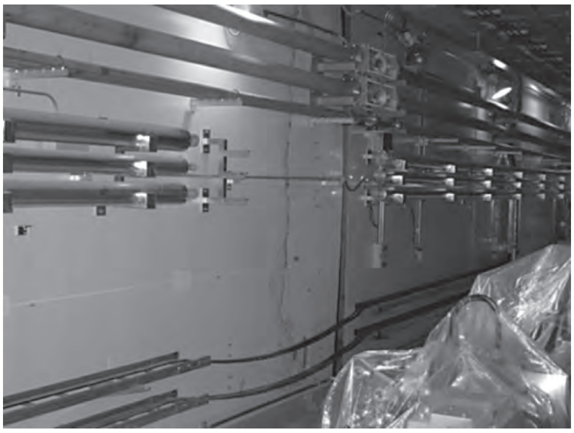


Fig. 12. The damaged wall was about to fall down at the expansion joint between 3NBT and MLF, as water ducts for the M1 and M2 air circulation systems were supporting the wall.

Muon Beam Commissioning

The D-line recovered from almost all earthquake damage and its operation was resumed at the end of December 2011. It is our great pleasure to report that we could deliver surface and decay muons of up to 60 MeV/c, which is the same intensity as that before the 2011 earthquake, towards the D1 and D2 lines. The user operation was restarted from February 2, 2012.

Measurement of deformation and thermal diffusivity of Graphite Target

We suspected a serious deformation of a muon target rod, and then the exact position of the muon target rod was measured in a Hot cell in August and September of 2011. Simultaneously, the irradiation effect of 3-GeV proton to thermal diffusivity of the graphite was investigated, because it is known that the crystal structure of graphite material is broken and the thermal diffusivity decreases by proton beam irradiation. Figure 13 shows the results of the position measurement. The difference in position between the used target and the un-irradiated target was less than 0.5 mm. In conclusion, the deformation of the muon target rods was relatively small; they can be used again.

The thermal diffusivity along a vertical line and a horizontal line going through the center of the muon target were measured every 1 mm. Furthermore, the thermal diffusivity of an area with dimensions of 20 mm horizontally by 16 mm vertically was measured every 2 mm (Fig. 14). It turned out that the diffusivity distributed in an ellipse-shaped area similar to the beam profile.

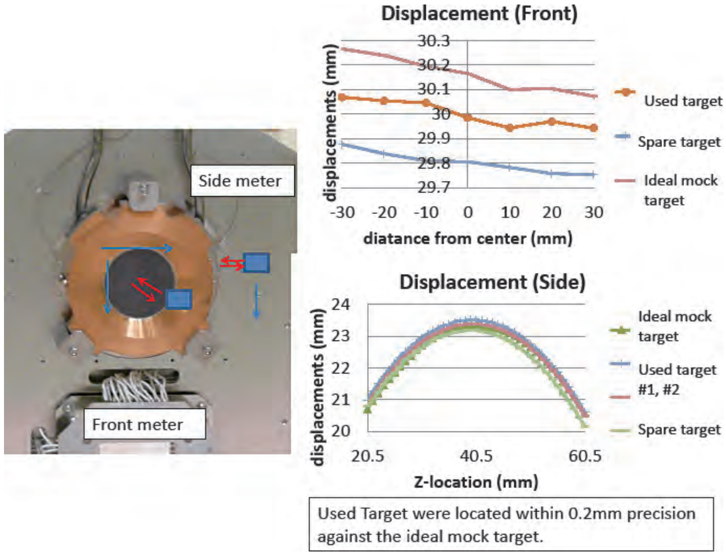


Fig. 13. The result of the measurement for the positions of used target and spare target against the position of the mock target.

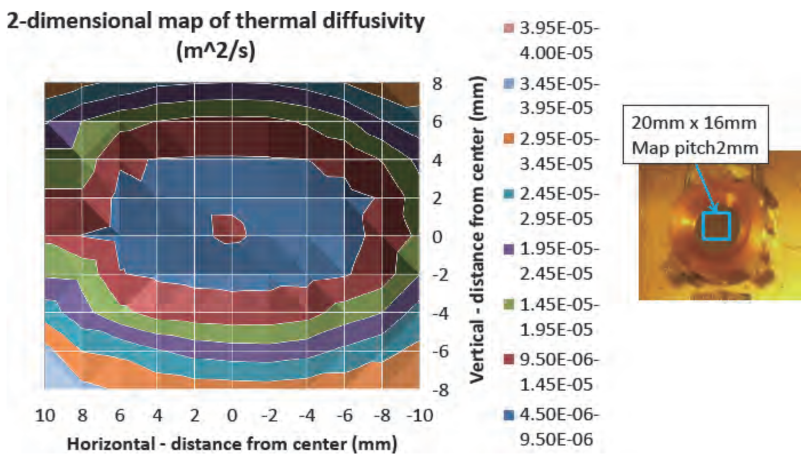


Fig. 14. The distribution of the thermal diffusivities on the area with dimensions of 20 mm horizontally by 16 mm vertically.

Status of Superomega Muon Beamline

The U-line in the second experimental hall of MLF is the second muon beamline. The Superomega muon beamline, which is a muon extraction and a transportation part of the U-line, is now being installed on the U-line. The characteristic features of the Superomega are a large solid angle acceptance, simultaneous extraction of both positive and negative muons, and the usage of solenoids for all beamline magnets. The first goal of the Superomega is to supply surface muons to the ultra-slow muon beam, which is energy tunable low energy muon beam for a variety of experiments, such as surface-interface magnetism and muon g-2 measurement.

The Superomega muon beamline consists of three parts, such as a normal-conducting capture solenoid, a superconducting curved transport solenoid, and an axial focusing solenoid. At present, the capture solenoid has already been installed in March 2009. The fabrication of the curved transport solenoid and the axial focusing solenoid was completed. Both of them will be installed in the summer of 2012.

The axial focusing solenoid is installed on the downstream of the curved transport solenoid. The axial focusing solenoid consists of five beamline vacuum chambers and six warm bore cryostats. Each cryostat has two thin solenoids, which can be individually applied to the current to transport and focus muon beam onto an experimental target. The axial focusing solenoid is cooled down by thermal conducting method using a 1.5-W Gifford-McMahon (GM) refrigerator.

To avoid radiation exposure in an experimental area, the beam blocker is inserted into the muon beamline to stop muons and other similar particles. To eliminate almost all positrons, which are simultaneously transported with the muons from the muon beam, electrodes of positron separators with a 30-cm gap, 75-cm length and 50-cm width can be applied ±400 kV by using Cockroft-Walton type high voltage power supplies on the beamline chamber. According to the simulation, 2×10^8 muons/s can be focused on to a final experimental target (70 × 50 mm) placed on 700-mm downstream of the last focusing solenoid. This indicates that the Superomega muon beamline will be the highest intensity pulsed muon source in the world. The first beam extraction experiment of Superomega beamline will be carried out in October 2012.

Fig. 15. The vacuum chamber of the positron separator and the cryostats of the superconducting coils of the axial focusing solenoid.

Neutron Device

Multiwire-type two-dimensional neutron detector with individual readout and optical signal transmission system for SHARAKU (BL17)

A position-sensitive neutron detection system that can read out individual signal lines and consists of a two-dimensional detector element has been developed for the polarized neutron reflectometer "SHARAKU". The developed neutron detector system consists of a 256 channel multiwire detector element with a space of 1 mm equipped into a pressure vessel, amplifier-shaper-discriminator (ASD) boards, optical signal transmission devices, position encoders with field-programmable gate arrays (FPGAs), and a fast data acquisition device (Fig. 16). An optical signal transmission is a promising candidate for use in the neutron scattering facilities at which many sample environments cause complicated background noises, because the optical fiber has no sensitivity to electromagnetic forces. It was found that our system can separate signal pulses with very fast time interval of 1 μs by evaluating the time response of our whole signal processing system.

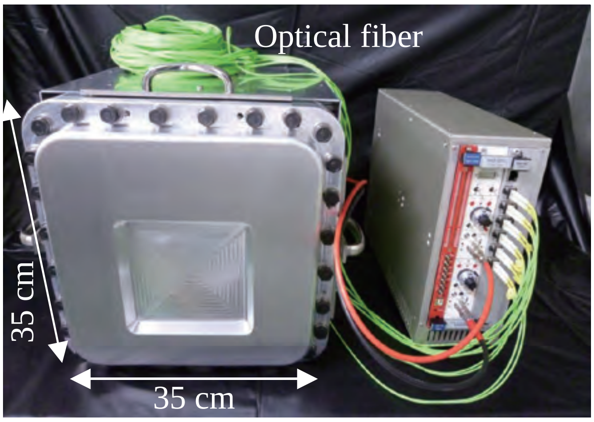


Fig. 16. A developed two-dimensional He-3 neutron detector system.

Development of an in-situ SEOP ^{3}He neutron spin filter: Compact magnetocavity

An in-situ spin exchange optical pumping (SEOP) ^{3}He neutron spin filter has been developed for the neutron scattering experiments at J-PARC, because it can polarize neutrons in a wide energy range and is effective for a large divergent beam, etc. It is important to make the system compact and stable, because the system is located inside thick and bulky radiation shields for high energy gamma rays and neutrons in neutron beam lines. We have developed a compact magnetostatic cavity (Fig.17 and Fig.18) with a double-layered permalloy shield and solenoid coils and a compact laser optics system with a volume holographic grating (VHG) element for the SEOP system. The magnetic field strength at the center position of the cavity is designed to be 2.339 mT and $|\Delta B_{\perp}/ B_0| \leq$ 5.34 cm^{-1}. This corresponds to the ^{3}He relaxation time of ~200 hours. Moreover, the cavity can keep the magnetic field homogeneity which leads to sufficiently long ^{3}He relaxation time longer than 100 hours under the existence of an external field of 3.5 mT.

Fig. 17. A developed magnetostatic cavity. The outer dimensions of the cavity were 272 mm in diameter and 364 mm in length.

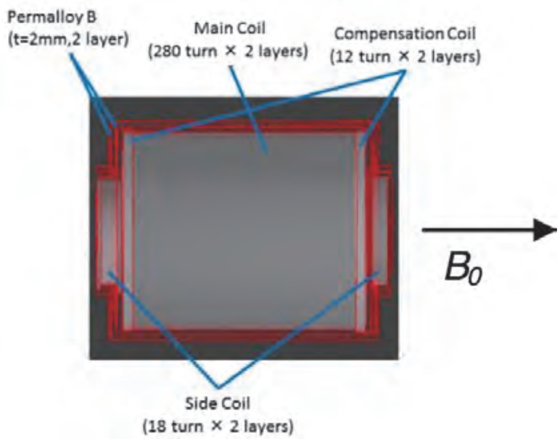
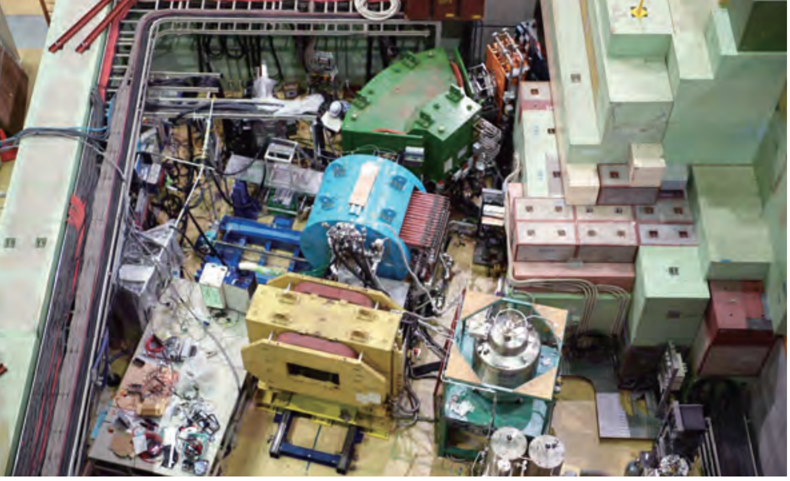
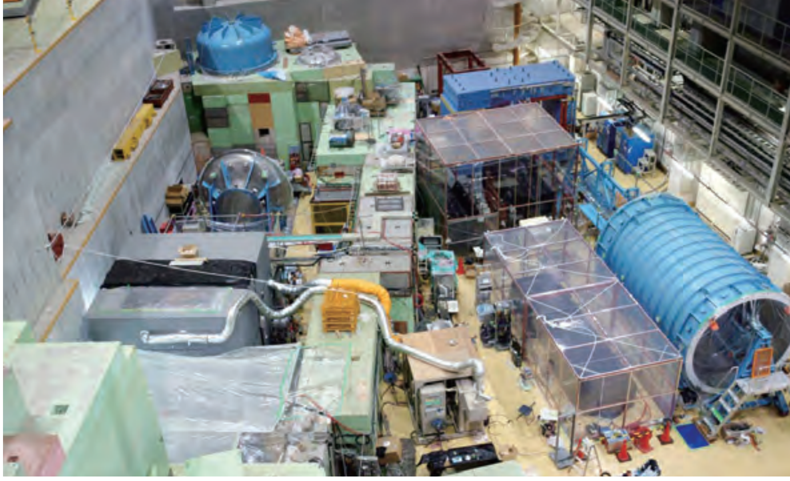
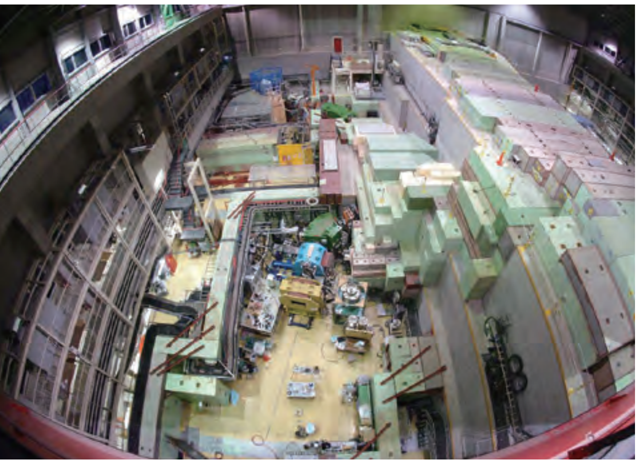
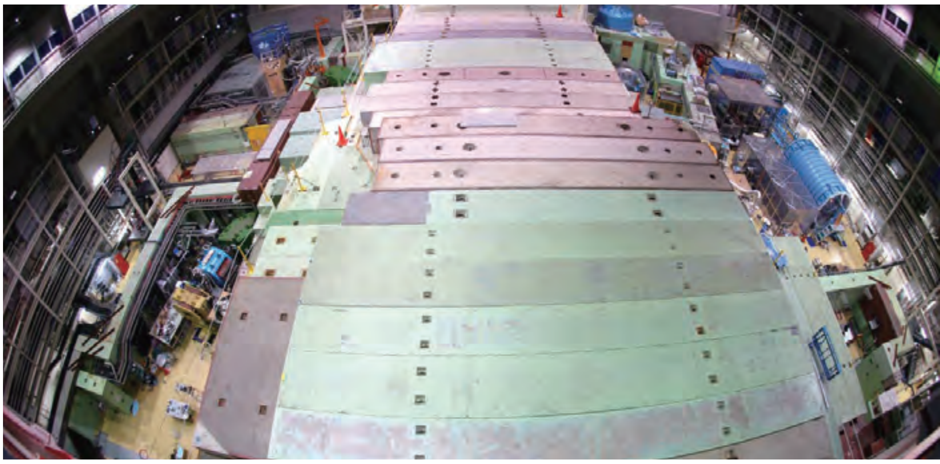


Fig. 18. A developed magnetostatic cavity.









Particle and Nuclear Physics

Hadron Experimental Facility

Overview

The year 2011 was a year of recovery from the Great East Japan Earthquake. A significant portion of human resources and time has put towards early recovery of the facility damaged the earthquake. However, the damage was not serious. After the earthquake, all the components of the facility, such as the magnets, beam monitors, and slits on the primary and secondary beam lines as well as the experimental detectors, were realigned. Due to the limited time, three secondary beam lines—K1.8, K1.8BR and KL— was able to be operated during the beam time of RUN40 from January 28 to February 22. The 30-GeV proton beam was back to the Hadron Facility at 21:07:38 on January 28. The beam from the Main Ring (MR) was successfully transported to the production target and the beam dump without any adjustment of the beam line parameters. Operation of the secondary beam lines was carried out from February 1 to 22 using a 3.3 kW beam.

In addition to the recovery, several improvements were achieved in the facility. A new indirectly water-cooled platinum production-target and additional shielding blocks for the 50 kW beam were installed. The government inspection for the 50 kW operation was performed successful.

In spite of the limited availability of the beam, there was a steady progress in present and future experimental programs. The search for Θ^+ penta-quark baryon at K1.8 has reached a sensitivity beyond previously achieved. A successful engineering run has been completed for experiments to study Kaon-Nuclear bound states at K1.8BR. Installation and commissioning of the apparatus for the KOTO experiment were well in advance preparing for the start of physics run in 2013. A high-momentum primary-proton beam line is being designed for the experiment to search for lepton flavor violation with muons and the experiments on hadron physics, such as studies of chiral property in nuclei. R&Ds have been performed for the beamline and experimental apparatus.

Experiments on Nuclear/Hadron Physics

Search for Θ^+ Penta-quark Baryon at K1.8

The Θ^+ is an exotic baryon with a quark content of *uudds^{bar}*. Since the first report from the LEPS experiment at SPring-8, many positive and negative results have been published; the existence of the Θ^+ is controversial. J-PARC E19 aims to search for Θ^+ via the p(π^-, K^-)X reaction with a good missing-mass resolution, better than 1.5 MeV/c^2 (FWHM), using a high-resolution beam and the SKS spectrometer.

The first physics run with the beam momentum 1.92 GeV/c was carried out at the K1.8 beam line in 2010. In total, 7.8×10^{10} π^- was irradiated on a liquid hydrogen target of 0.86 g/cm^2. No peak structure corresponding to the Θ^+ was observed, as shown in Fig.1. The upper limit (90% C.L.) of the forward angle cross section was obtained as 0.26μb/sr over the mass region from 1.51 to 1.55 GeV/c^2. With the help of a theoretical model based on the effective Lagrangian and by introducing a Yukawa coupling and hadron form factors, the upper limit of the decay width of Θ^+ was estimated to be 0.72 and 3.1 MeV/c^2 for J^P= 1/2$^+$ and 1/2$^-$, respectively.

The second run at the beam momentum 2.0 GeV/c was successfully completed in RUN40. In total, 8.7×10^{10} π^- was irradiated with 1.7×10^6/spill intensity, owing to the improved extracted beam and detector conditions. A higher sensitivity than that of the first run is expected.

Studies on Kaon-Nuclear bound states at K1.8BR

J-PARC E15 aims to study kaon nuclear bound states, K^-pp, with both missing mass and invariant mass methods. K^-pp is produced via the ^{3}He(K^-, n) reaction and detected through the $K^-pp\to\Lambda p\to\pi^-pp$ decay chain using the Cylindrical Detector System (CDS). The E15 group carried out a commissioning of the beam and CDS using a liquid-^{4}He target at the K1.8BR beam line. The CDS was confirmed to operate well; the reconstructed vertex points were distributed in the target cell. A Λ peak was clearly reconstructed in the $p\pi^-$ invariant mass spectrum. Fig.2 shows a typical event display for the $\Lambda p\to\pi^-pp$ final state.

Study for High Momentum Beam Line

In addition to the current experiments, preparations for future upgrades in the Hadron Facility are underway. Construction of a high momentum beam line is planned in the next five years. A new experiment to study chiral properties in the nucleus is also being planned.

The new beam line will be separated from the current primary beam line at the middle of the switch yard, where a very small fraction (~0.01 %) of the primary beam will be bent. The design of the magnet for bending the halo part of the beam is very important. Therefore, the beam profile including the halo part was carefully measured over a wide range. Fig.3 shows the results of these measurements, exhibiting a clear beam profile over the three orders of magnitude.

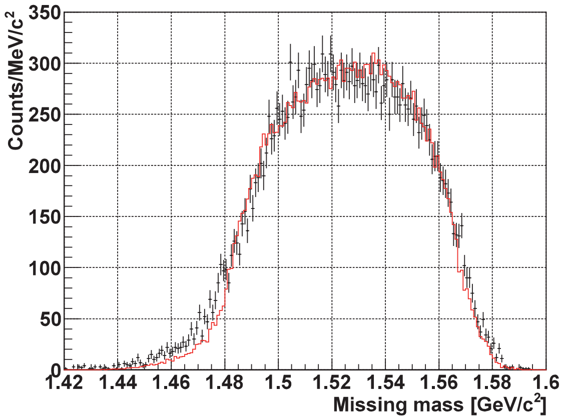


Fig. 1. Missing mass spectrum for the reaction p(π^-,K^-)X at the beam momentum 1.92GeV/c, obtained from the first run of E19. The red curve shows a simulated spectrum of the background processes.

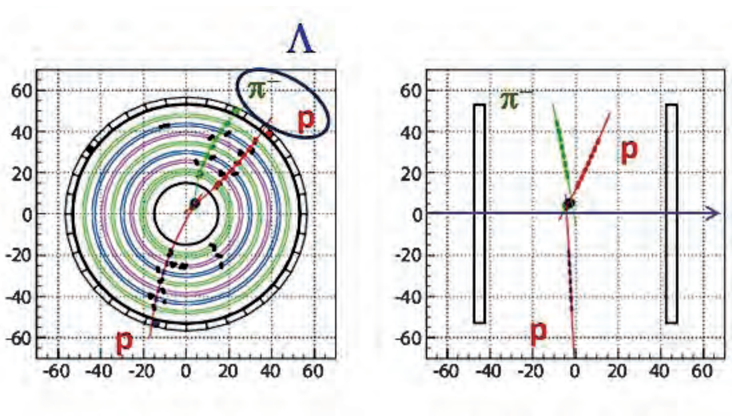


Fig. 2. Typical event display for the $\Lambda p \rightarrow \pi^- pp$ final state measured using the CDS at K1.8BR.

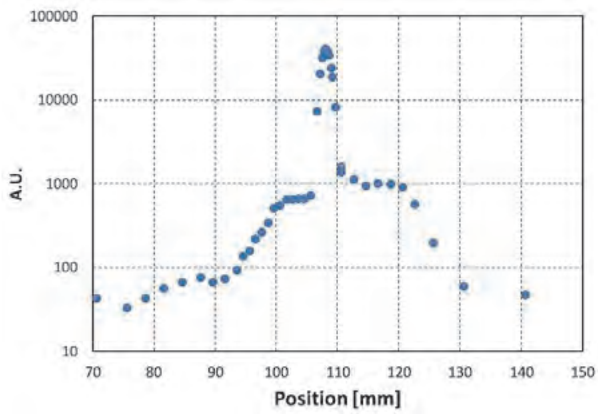


Fig. 3. Measured beam profile.

Experiments on Particle Physics

Search for rare Kaon decay

The quantum transition of a heavy particle into lighter particles is called "decay" in particle physics. The decay of a particle proceeds via several patterns or "decay modes." Once experimentally determined, the branching fraction for a decay mode is compared to the theoretical predictions. A discrepancy (if any) between the experimental results and theoretical predictions is an evidence for new physics that goes beyond the Standard Model (SM).

The decay of a long-lived neutral kaon (K_L) into a neutral pi meson (π^0) and pair of neutrinos—represented as $K_L \rightarrow \pi^0\nu\nu$—is known to be a "rare and precious" decay mode in particle physics. The symmetry in the combination of the discrete multiplicative operations of charge conjugation (C) and of spatial inversion of coordinates (P) – "CP symmetry" in short - is broken in this transition, and new sources of symmetry breaking that can explain the matter–antimatter asymmetry in the universe may be revealed most clearly by examining this decay. In theoretical studies, $K_L \rightarrow \pi^0\nu\nu$ is a very clean decay mode. SM predicts its branching fraction to be 2.43×10^{-11}; i.e., the decay occurs once in every forty billion K_L decays. Thus far, the theoretical uncertainty of the fraction is 16%; however, it will be reduced to several percent or less in the near future based on the results of other experiments, e.g., Belle II. In contrast, for experimentalists, this is a challenging decay mode because only two photons from π^0 decay are observable. The most stringent upper limit to date was set by the E391a experiment at the KEK 12 GeV proton synchrotron at 2.6×10^{-8}, which is still a thousand times larger than the SM prediction.

In 2006, the J-PARC E14 KOTO experiment was proposed to search for the "one precious stone" in forty billion K_L decays; it is now under construction at the Hadron Experimental Hall. The beam power of the slow-extracted protons from the 30 GeV Main Ring would be suitable for the rare decay search. A new neutral beamline was built for KOTO, and the beam was surveyed in 2009.

A new electromagnetic calorimeter with 50-cm-long undoped CsI crystals—used previously in the KTeV experiment at Fermilab, USA—was constructed in 2010. After the big earthquake in March 2011, the crystals and phototubes in the calorimeter were examined and confirmed to be undamaged. The beamline components were realigned (Fig. 1), and detector construction was resumed. In August and September 2011, the calorimeter was tested in a vacuum (Fig. 2).

The J-PARC accelerators resumed operation in 2012; using the slow-extracted beam in February 2012, an engineering run of the calorimeter was conducted to establish the calibration methods with the electrons from the $K_L \to \pi e \nu$ decay and the photons from the $K_L \to \pi^0\pi^0\pi^0$ decay. Also, in February, the vacuum vessel of E391a, which was to be reused for the KOTO detector, was moved from Tsukuba to Tokai (Fig. 3).

The KOTO collaborators will continue detector construction in 2012. The team plans to start the treasure hunt, i.e., the physics run, in 2013.

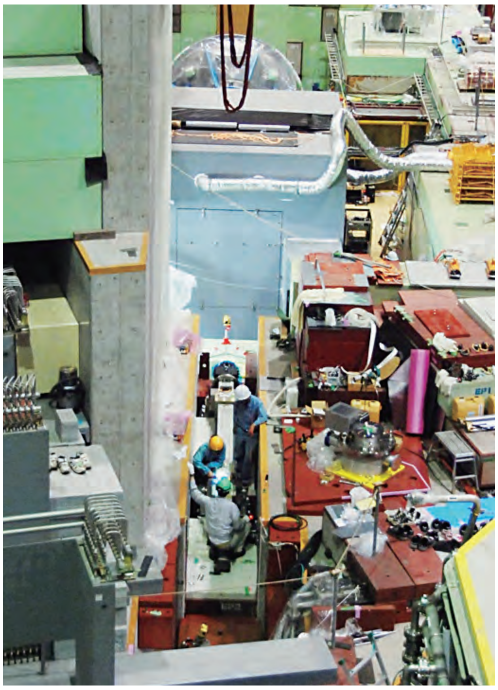


Fig. 1. Realignment of the beamline components of the KOTO experiment.

Fig. 2. KOTO personnel working on placing a cap on the calorimeter for a vacuum test.

Fig. 3. E391a vacuum vessel that arrived at the Hadron Experimental Hall in Tokai (top) and was placed on the floor of the hall (bottom), where it will remain until detector construction starts.

Search for Charged Lepton Flavor Violation with muons

The Standard Model of particle physics strictly requires the conservation of lepton flavor in charged leptons. Studies on the lepton flavor violation (LFV) process with muons probes new physics beyond the Standard Model. The Coherent Muon to Electron Transition (COMET) experiment at the J-PARC was proposed to search for an LFV process, i.e., the μ-e conversion, with a sensitivity of 10^{-16}. There was no opportunity to use a beam at J-PARC in 2011 because of the recovery efforts of the accelerator; however, detector development and study of the superconducting magnet have helped to make substantial progress.

A prototype of the straw tube tracker used in the COMET experiment has been built and tested in vacuum. Not only the detector performance but also the straw stabilities in vacuum were investigated. A dedicated electronics board, including waveform digitization chips developed with the analog-memory technology, was designed for future data acquisition in collaboration with the electronics system group of KEK-IPNS and its prototype was produced to study the behavior of the system. Integration tests of the detector and electronic prototypes are anticipated in 2012.

Study of the superconducting magnet has also advanced significantly in 2011. The aluminum-stabilized superconducting wire used for the pion/muon collection system requires high radiation tolerance. It is known in the literature that aluminum resistivity deteriorates at cryogenic temperatures after significant irradiation by neutrons, but it can be recovered after a thermal cycle to the room temperature. In order to reconfirm this and optimize the magnet operation procedure, a neutron irradiation test was conducted at the research reactor of Kyoto University. Figure 1 shows the change in resistivity in the aluminum samples. Deterioration of the resistivity and recovery after thermal cycles has been confirmed in the test, which provided the COMET experiment with useful information to optimize the magnet operation procedure. Additionally, a test coil using an aluminum-stabilized super-conducting wire was fabricated. A series of excitation tests will be conducted to investigate the coil's performance at cryogenic temperatures in 2012 under the U.S.-Japan cooperative research program.

In 2011, the COMET experiment succeeded in expanding collaboration by involving more researchers. This should certainly provide a critical boost towards the successful realization of the experiment. Currently, the COMET group plans to start a principal background study, followed by physics data acquisition in 2016 and a partial construction of the facility.

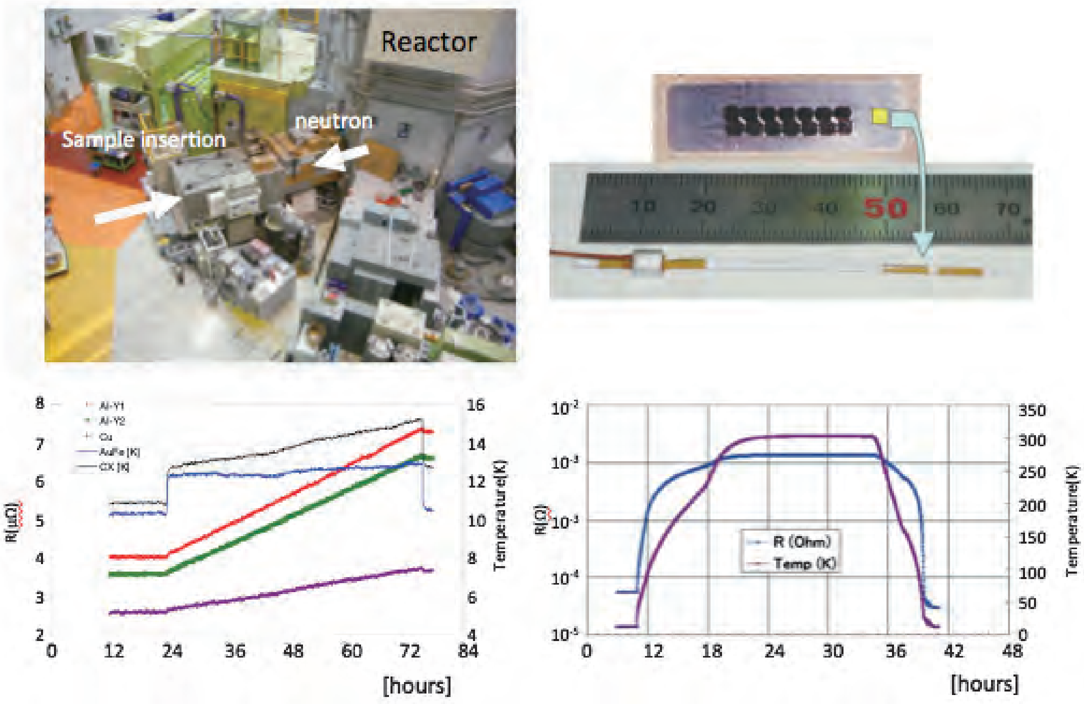


Fig. 1. Neutron irradiation test facility at cryogenic temperatures in Kyoto University (top left) and a tested aluminum-stabilizer sample (top right). Changes of resistivity of two samples with different yttrium doping ratios are shown as a function of irradiation time (bottom left). Resistivity change of a copper sample is also shown as a reference. Resistivity recovery in a thermal cycle is demonstrated (bottom right).

Neutrino Experimental Facility

Neutrinos are subatomic particles with no electric charge, and have the smallest mass of all known particles. Neutrinos come in three types, or "flavors": electron, muon, and tau. As they travel, neutrinos can transform, or "oscillate", from one flavor to another. This is called "neutrino oscillation", a consequence of the fact that neutrinos have mass and thus mix with each other. Each of the neutrino flavor states appears as a superposition of different mass states, and the difference in their extremely small masses causes a periodic change in flavors during flight.

The Tokai-to-Kamioka (T2K) experiment is a second-generation long-baseline neutrino oscillation experiment. The primary goal of the T2K experiment is the search for the muon neutrino (ν_μ) to electron neutrino (ν_e) oscillation. Its probability is described with the mixing angle between the first and third generations, θ_{13}, which is last unknown neutrino mixing angle. This θ_{13} is the key quantity to explore CP violation of leptons, which is one of the biggest questions of particle physics.

To achieve this objective, T2K directs high-intensity muon neutrino beams with 99.5% purity. The muon neutrino beams produced at the neutrino experimental facility in J-PARC are directed toward the Super- Kamiokande detector (SK), which is located 295 km west of J-PARC. SK is the world's largest underground neutrino detector, which contains 50,000 tons of purified water as the target for the neutrino beam. The rare interaction between neutrinos and nuclei in the water can be detected by the ~11,000 photo-sensors fixed on the entire inner surface. The appearance of electrons in the water, charged counterparts of the electron neutrinos, is a clear sign of the ν_μ to ν_e oscillation.

The T2K physics experiment started in January 2010, and interrupted due to the Great East Japan Earthquake. T2K published the first result of the θ_{13} measurement in July, 2011 based on the data taken until March 11th, 2011. T2K scientists were able to identify 6 electron neutrino candidate events with data corresponding to 1.43×10^{20} POT, while the estimated number of background events was 1.5±0.3. they obtained θ_{13} value of $0.03 < \sin^2 2\theta_{13} < 0.28$ with 90% confidence level, the world-first result indicating non-zero θ_{13}. The T2K experiment's result for the first time provides a statistically significant indication of appearance[1]. This result has been nominated as one of the top ten scientific breakthroughs of 2011 in Physics World (the physics magazine of the U.K.).

The neutrino facility suffered serious damage due to the Earthquake. JFY2011 was devoted to the inspection, repair, and re-commissioning of experimental equipments, as well as damaged buildings and grounds. Fig. 1, 2 and 3 show some of the recovery works: ground damages, re-alignment of the proton beam transport magnets, and inspection of the focusing pulse magnet, so-called the horn. The horns and all other equipments on the secondary beam line are highly radio-activated due to the beam irradiation. Inspections were carried out remotely with cameras, lasers, or through lead-glass window.

From December 24th in 2011, neutrino beam has been produced again (Fig.4). The first neutrino event was observed on Dec.25 by the on-axis neutrino detector INGRID at Tokai, and on Jan. 26, 2012 by SK (Fig.6). The beam power has been increasing gradually from a few kW at the very first re-commissioning to 200kW at the beginning of June, which is more than the beam power before the earthquake. T2K resumed physics data taking on March 8th. The history of data accumulation in terms of protons-on-target (POT) from January 2010 to June 2012 is shown in Fig.5. The neutrino beam operation in the early half of 2012 was completed in 9th June as scheduled and the accumulated data after the earthquake exceed the data took before the earthquake. The beam quality was measured to be very stable as before. Alignment of the target and the collimator, which could not be inspected optically before the beam re-start due to accessibility, was also verified using the proton beam. Some troubles such as temporal use of an old horn power supply still remains. The team has been making efforts towards the full recovery.

The T2K collaboration presented the new results on ν_μ to ν_e oscillation with the improved analysis method based on all the available date, which includes the data took after the earthquake, at the international conferences in the summer 2012 such as the XXV International Conference on Neutrino Physics and Astrophysics (NEUTRINO 2012) in June and the 36th International Conference on High Energy Physics (ICHEP2012) in July. Based on the data collected until 9th June, 2012, corresponding to 3.01×10^{20} POT, the number of the observed electron neutrino candidate events become 11 while the expected number of background events is 3.22±0.43 (Fig. 7). Now the probability of background fluctuation to yield 11 or more events (p-value) is 0.08% corresponding to a 3.2σ level of significance, making it extremely unlikely that a statistical fluctuation is at the origin of the observed events. The obtained results for θ_{13} value is $\sin^2 2\theta_{13}$=0.094 (+0.053 -0.040) assuming no CP violation in neutrino oscillations and normal hierarchy of neutrino mass states. The neutrino beam operation will be resumed after the maintenance period in 2012 summer and T2K expects to obtained the conclusive (5σ) results of the non-zero θ_{13} by summer 2013.

Fig. 1a. The collapsed ground due to the earthquake.

Fig. 1b. The ground has been filled and restored.

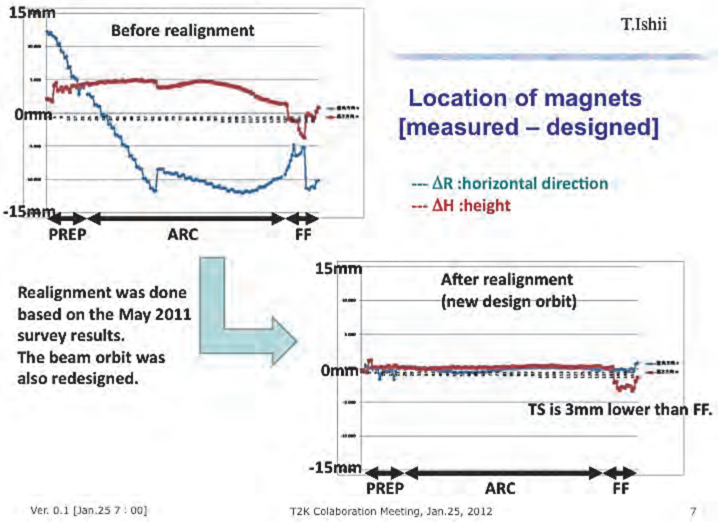


Fig. 2. Magnet re-alignment: Most of the proton beam transport magnets moved several millimeters over the beam line. They are re-aligned to the re-designed beam orbit within much better than 1mm.

Fig. 3. The 3rd horn under transportation from the beam line to the maintenance area for inspection. All the works were done remotely due to the high residual radio-activity.

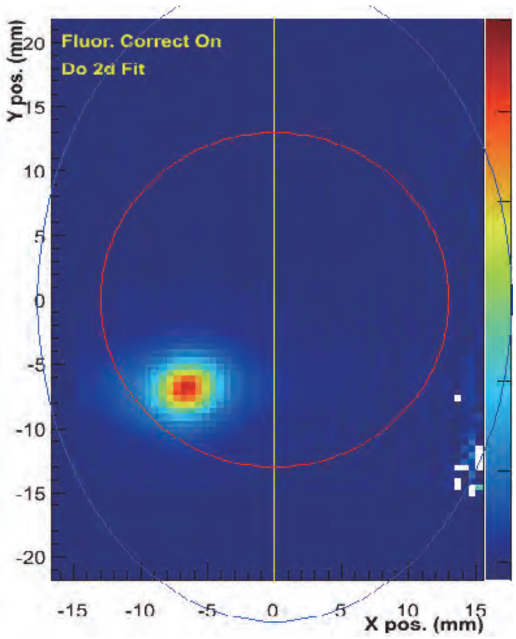


Fig. 4. Beam profile at the target front-face for the first beam after the earthquake. Though slightly off-centered, the beam hit the target successfully at the very first shot. The red line shows the target outline.

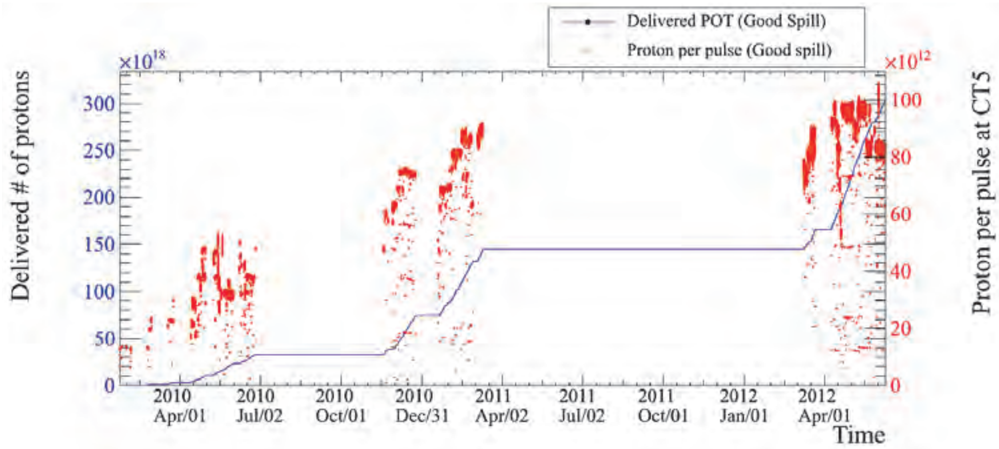


Fig. 5. Total number of protons delivered to the target for the physics run from January, 2010. The red dots (see right axis) shows POT in a pulse (beam intensity), and the blue line (left axis) shows integrated POT.

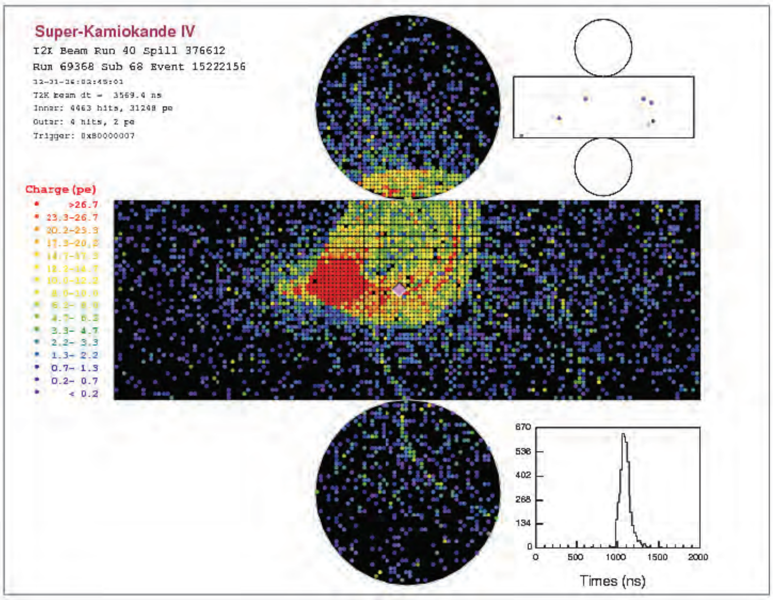


Fig. 6. First event in Super-Kamiokande since the earthquake (2:45 AM JST, Jan 26, 2012).

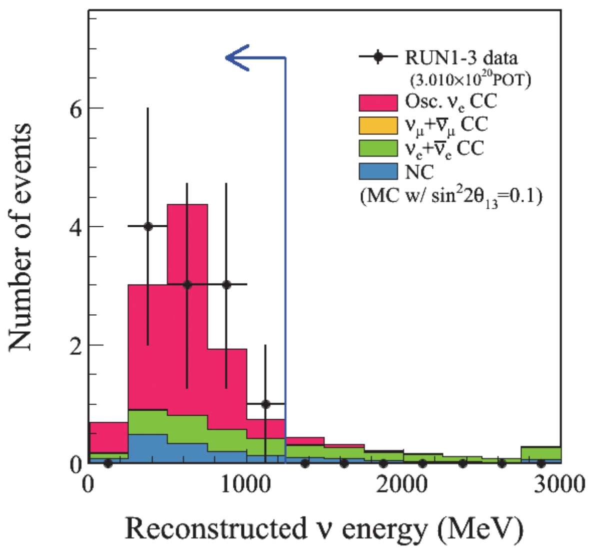
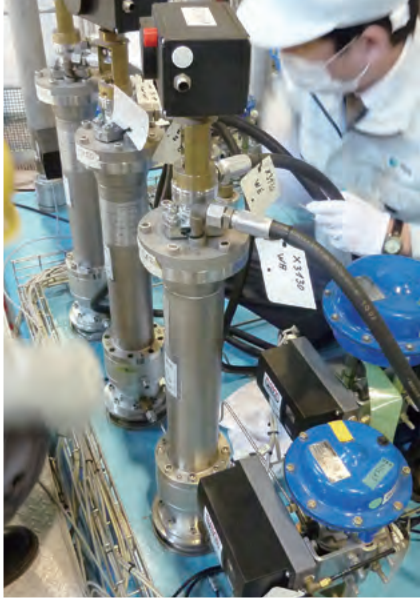


Fig. 7. Reconstructed neutrino energy spectrum of the events, which pass all electron neutrino event selection criteria (closed circles), overlaid with the theoretical expectation (histograms). A total 11 events was observed, which is well reproduced by assuming electron neutrino appearance signal (red histogram) plus expected background events.


Cryogenics Section

Overview

The cryogenics section supports scientific activities carried out at J-PARC in applied superconductivity and cryogenic engineering. It also supplies cryogen of liquid helium and liquid nitrogen. The support work includes the operation of the superconducting magnet system for the neutrino beamline, and support of the construction of a superconducting solenoid magnet system for the new muon beamline at the Materials and Life Science Experimental Facility (MLF). An R&D work to support the future projects in J-PARC is also very active.

Superconducting Magnet System for the T2K Beamline

The Cryogenics Section operates the superconducting magnet system for the T2K neutrino beamline. The operation record for FY 2011 is summarized in Table 1. Although the damage on the SC magnet system due to the Great East Japan earthquake was relatively minor, the recovery work continued until the end of 2011. It started with a visual inspection of the system including an inspection inside the cryostat. The trial operation took place in May 2011 after the initial recovery work confirmed the system's viability. Then rest of the recovery work included magnet re-alignment and routine maintenance. The system operation for the physics run started in December 2011 and continued until June 2012, except for a short shutdown during the New Year holiday and the beam time for the Hadron Hall in February 2012. There were 3 system trips due to the magnet safety system (MSS) errors in March and May 2012. The cause of the errors has been mostly fixed and now the system is operated soundly.

Table 1. Operation history of the superconducting magnet system for the J-PARC neutrino beamline.

	2011									2012					
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Operation		Trial operation for system check							Beam operation (including physics run)						
Recovery work and Maintainance	Damage survey and initial damage recovery		Damage recovery,magnet re-alignment and routine maintainance												
Incidents	Trip due to MSS error:07Mar2012, 15Mar2012, 17May2012 Trip due to power flicker by thunder storm:06May2012														

Superconducting Kaon Spectrometer (SKS)

The Cryogenics Section also supports the Superconducting Kaon Spectrometer (SKS) operation at the J-PARC Hadron Hall. The stands of the magnet were damaged by the earthquake. The magnet which weighs 282 tons, slipped by up to 77 mm on the floor, and 6 bolts on the magnet stand were broken due to the large shearing force (Figure 1). After investigation and repair, the magnet was cooled down, and excitation tests were performed. In Feb. and June 2012, the SKS magnet was operated successfully for physics data collection.

Fig. 1. The Superconducting Kaon Spectrometer (SKS) magnet with broken bolts (left).

Construction of the Superconducting Magnet System at MLF

The Cryogenics Section supports construction of the intense ultra-slow muon beamline in MLF. One of the major contributions of the cryogenics section is the development of the superconducting curved solenoid (Figure 2). The section also supports the construction of the superconducting focusing solenoids that will be used in the same beam lines. The superconducting magnets are being installed at the MLF in the summer of 2012 and will start operation in the fall of 2012. The cryogenics section continuously supports both installation and operation.

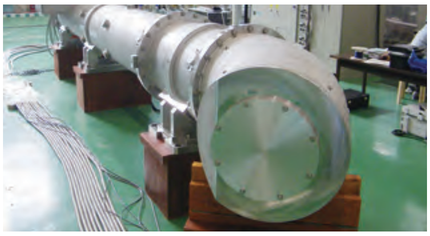


Fig. 2. Superconducting curved solenoid for ultra-slow muon beamline.

Cryogen Supply and Technical Support

The Cryogenics Section provides liquid helium cryogen for physics experiments in J-PARC. The liquid helium is supplied to the users in collaboration with the Accelerator Division using the helium liquefier owned by the Accelerator Division. The used helium is recovered by the helium gas recovery facility, which is provided and operated by the Cryogenics Section. Figure 5 summarizes the liquid helium supply in FY 2011. The major users of liquid helium have been the SKS and the liquid hydrogen target in the Hadron Hall. The helium gas recovery fraction has been better than 90%. Liquid nitrogen was also supplied to the users for their convenience and its amount during the period from April 2011 to June 2012 was 14100 litters.

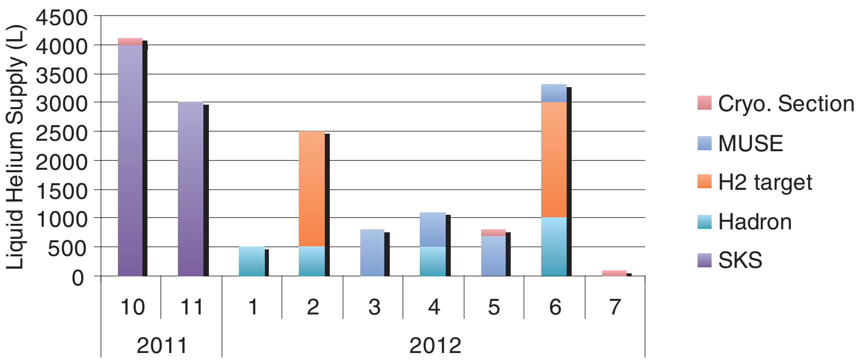


Fig. 3. Liquid helium supply at J-PARC from Oct. 2011 to June 2012.

R&D for the Future J-PARC Project: COMET

A new experiment, COherent Muon to Electron Transition (COMET) has been proposed to search for mu-e conversion processes using the high intensity proton beam from the Main Ring. The Cryogenics Section has been involved in the COMET experiment to develop the superconducting magnet system. The project requires a large aperture solenoid that covers a pion production target to capture pions with large acceptance. A solenoid using an aluminum stabilized superconducting cable was proposed. A major issue for the R&D is that irradiation of neutrons to the solenoid. The neutron irradiation test at the Kyoto University Research Reactor Institute has been performed to investigate the RRR degradation in stabilizer aluminum and copper in FY2011. In addition an R&D coil with aluminum stabilized cable with radiation hard insulation was fabricated as shown in Figure 3.

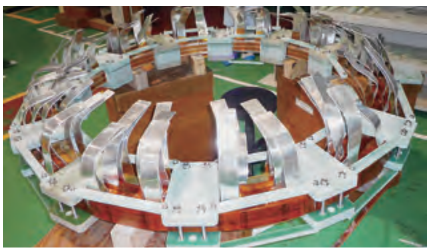


Fig. 4. The R&D coil of the capture solenoid for COMET.

R&D for the Future J-PARC Project: New g-2 and HFS

The g-2 project aimed for the precise measurement of the anomalous magnetic moment of muons has been proposed by a group of IPNS. This project received stage-1 approval through the 13th PAC meeting in FY2011. In this experiment, a superconducting solenoid with high field homogeneity better than 0.1 ppm is a key component to store muons during measurement of their precession frequency. Design study of the magnet is in progress in collaboration with IPNS and Cryogenics Science Center. Systematic magnetization measurement for structural components and electrical devices included in the magnet has been carried out to estimate the error field caused by each material. In addition, a magnetic field monitoring system using a NMR probe is also under development, which is essential for field tuning (Figure 4).

As one of the other experiments related to muon physics in J-PARC, precise measurement of muonium hyperfine structure (MuHFS) has been also proposed by a group of IMSS. In this experiment, the energy state transition in muonium will be observed under a static magnetic field with local homogeneity of 1 ppm. The technical design of this magnet is progressing in collaboration with the Cryogenics Science Center and the Mechanical Engineering Center (Figure 5). We are repeating the trial winding of a solenoid coil to learn how the ideal wire configuration is realized. One of the critical issues to achieve the required field homogeneity is finding ways to reduce the vibration transfer from the cyocoolers. We have started vibration measurement using a model cryostat to consider effective coil support structure for low vibration.

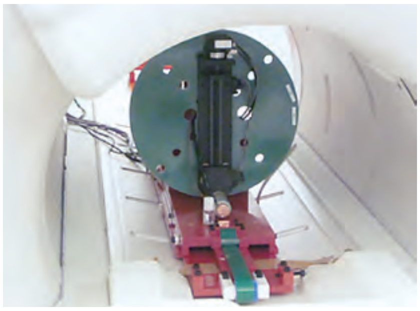


Fig. 5. Field monitoring system using a NMR probe.

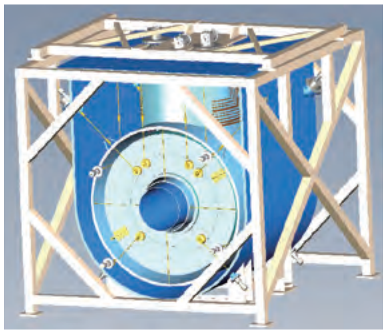


Fig. 6. 3D CAD image of a superconducting magnet for the MuHFS experiment.

Study on Strain Behavior of Superconductors

It is a well known fact that the critical current densities of HTS (High Tc Superconductors) and A15-type superconductors (Nb3Sn, Nb3Al) for the high field magnet beyond 10 T strongly depend on stress/strain. The Cryogenics Section has been pursuing studies on the strain behaviors of the Nb3Al superconductors by the neutron diffraction measurement at the BL-19 (TAKUMI) of J-PARC MLF. Recently, the Cryogenics Section has developed a new 50 kN cryogenic load frame in collaboration with the Neutron Science Section and JAEA. This load frame can provide a tensile or compressive load to the superconductor at low temperature of up to 5 K. A beam commissioning of the load frame using a stainless steel sample has been completed in June 2012 and the measurement of the Nb3Al sample will be made in October. This load frame is currently available for other experiments. For example, an in-situ neutron diffraction measurement to observe a transition of a NiFeGaCo sample was performed at the BL-19 with the technical support of the Cryogenics Section.

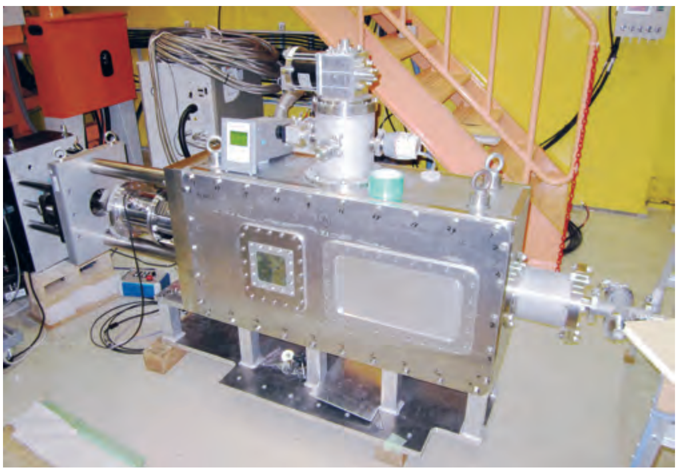


Fig. 7. Picture of the cryogenic load frame for the neutron diffraction measurement at the BL-19 (TAKUMI) of J-PARC MLF.

New KEK central computer 16PB tape robotic library system (IBM TS3500) available for J-PARC users.

Information System

Overview

Since 2002 the J-PARC network infrastructure called JLAN has been operated independently from KEK LAN and JAEA LAN in terms of logical structure and operational policy. The Information System Section designs, manages and operates the network system and also has research and development activity of Authentication System and Data Base System for J-PARC. Each System is aiming to be both secure and easy-to-use ICT (Information Communication Technology) infrastructure for the J-PARC users and staffs.

Statistics of Network Utilization

JLAN itself sustained quite little damage during the Great East Japan earthquake of March 11. The network facilities, all fiber cables between the JLAN core network switch and the edge switches deployed around J-PARC related buildings and computer resources in KEK avoided serious damages. Therefore, according to the recovery process of each of the J-PARC buildings, the JLAN switches restarted their operations as shown in Fig. 1.

In 2011, the total number of hosts on JLAN reached over 3100 and the number has been increasing at a rate of 110% per year. The growth curve of edge switches, wireless LAN access points, and hosts connected to JLAN are shown in Fig. 2. JLAN has also played an important role in connecting the Tokai area, where the main J-PARC facilities were built, and the Tsukuba area, where the major computer resources for data analysis are located. Figure 3 shows the statistics of annual data transfer between the two sites. The bandwidth capacity for the connection is currently 2Gbit/s and has reached almost one thirds of it. So an early bandwidth capacity increase is desirable. Figure 4 also depicts the network utilization of the Internet.

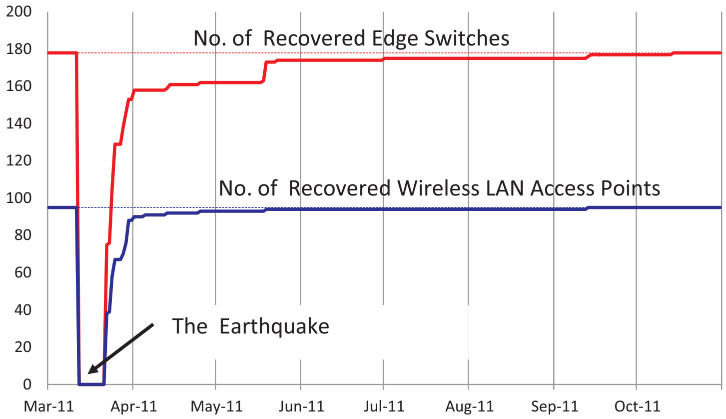


Fig. 1. The recovery of JLAN Building Edge Switches.

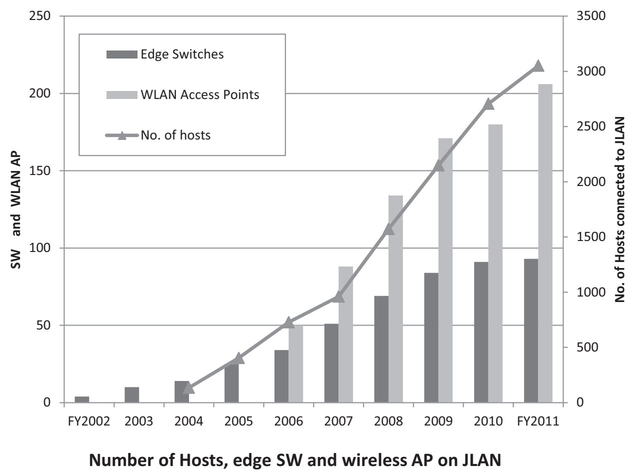


Fig. 2. Growth of J-PARC network (JLAN).

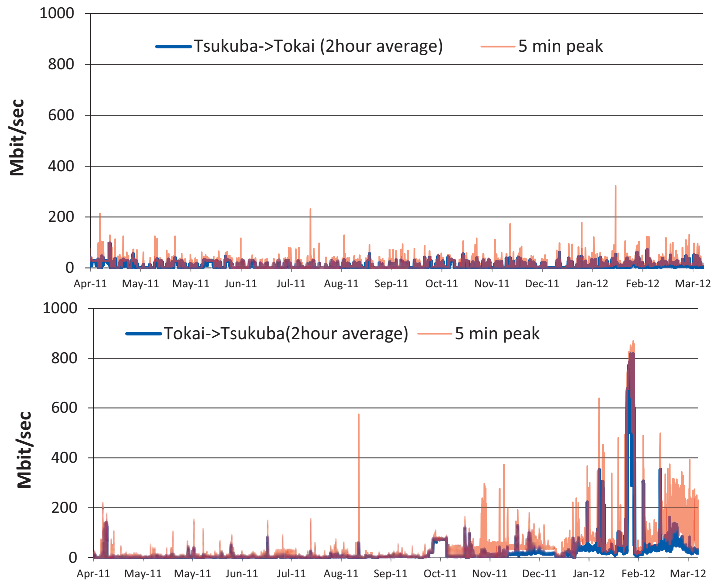


Fig. 3. Bandwidth utilization between Tokai campus and Tsukuba campus. Upper: from Tsukuba to Tokai Lower: from Tokai to Tsukuba.

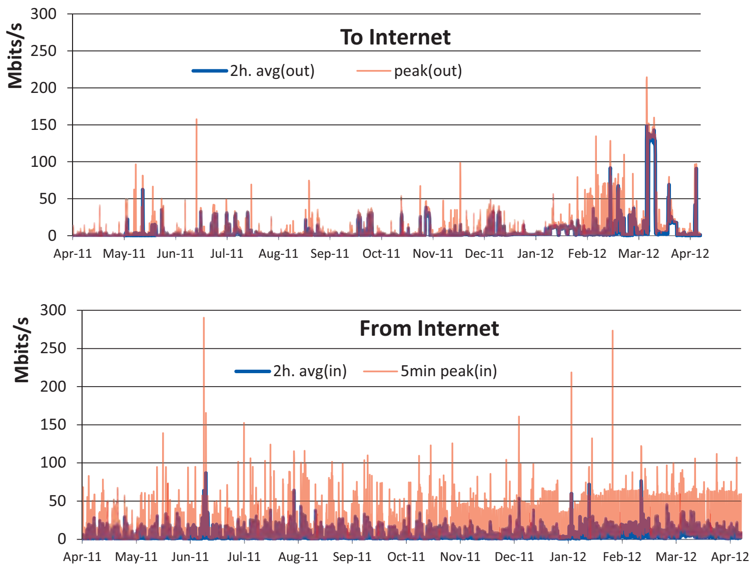


Fig. 4. Network utilization to the Internet.

Statistics of Computer Resource Utilization

J-PARC does not have its own computing facility for physics analysis and uses the KEK computing resources of 1600 SPECint06 computing power, 150TBytes RAID disks and 2PBytes tape libraries in the KEK Central computer system at the Tsukuba site. In the Neutrino (T2K experiment) and Hadron experiments, the data taken in the J-PARC experimental hall will be temporary saved at the Tokai site and then promptly transferred to, stored and analyzed at the system in Tsukuba. The storage of the system will also be utilized as a permanent data archive for the Neutrino, Hadron and MLF experiments. Figures 5 and 6 show the utilization statistics of the computer resources in 2011. The main Hadron users who used the system constantly were those who continue their experiment (Koto Exp. Group) in series from the former KEK 12GeV Proton synchrotron to J-PARC. The Neutrino experiment group started to use the computing resources soon after the winter runs of 2011 when J-PARC restarted after the earthquake and stored their data reaching a capacity of 100 Tbytes.

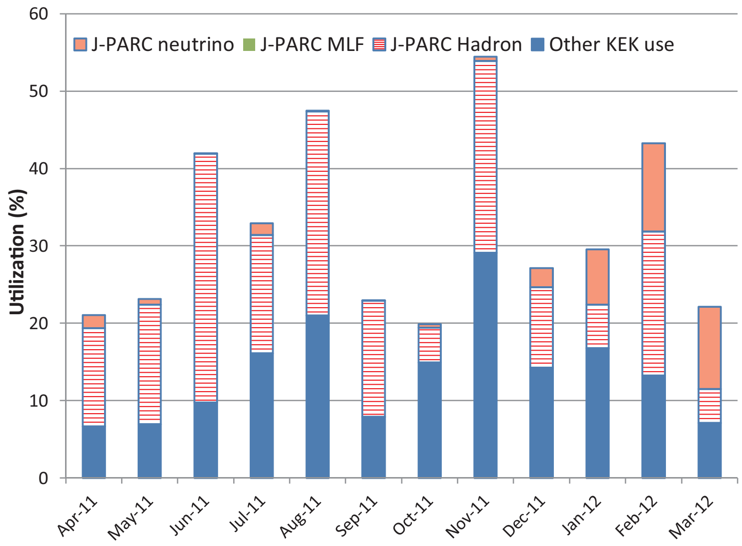


Fig. 5. 2011 annual utilization of the KEK central computer system by J-PARC activities. (MLF groups utilization occupied a very small ratio).

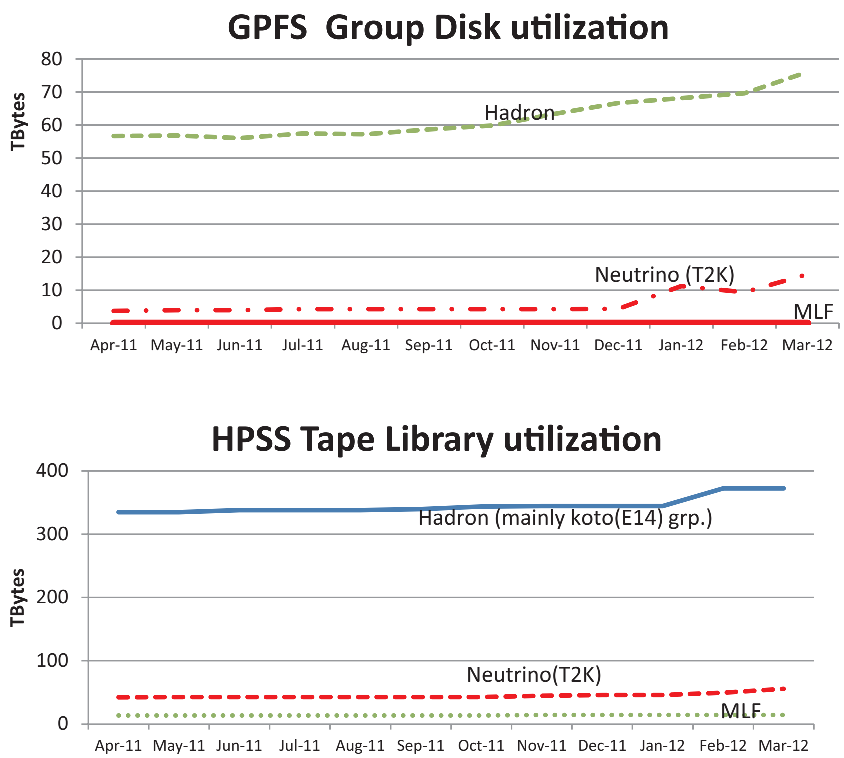


Fig. 6. Storage utilization of the KEK central computer system by J-PARC activities.

Transmutation Studies

Activities

Post Irradiation Test

To obtain the irradiation data on structural materials of spallation target, an international experimental program called “STIP” (SINQ Target Irradiation Program, SINQ; Swiss spallation neutron source) is in progress[1]. Post Irradiation Examination (PIE) of ferritic / martensitic (FM) steel F82H and its welded joint specimens was carried out at the hot laboratories in the Tokai Research and Development Centre, JAEA. The results of tensile tests performed at room temperature indicated that the irradiation hardening occurred with increasing the displacement damage up to 10.1 dpa irradiation at 320°C. At higher dose (11.8 dpa) in higher temperature (380°C), irradiation hardening was also observed, but degradation of ductility was relaxed in F82H welded joint. All specimens kept its ductility after irradiation and fractured in ductile manner. The results on bend-fatigue tests showed that the fatigue life (N_f) of F82H base metal irradiated up to 6.3 dpa was almost the same with that of unirradiated specimens. The N_f of the specimens irradiated up to 9.1 dpa was smaller than that of unirradiated specimens. Though the number of specimen was limited, the N_f of F82H EB welded joints seemed to increase after irradiation and the fracture surfaces of the specimens showed transgranular morphology, while F82H TIG welded specimens were not fractured by 10^7 cycles.

MEGAPIE

Several meetings on MEGAPIE (MEGAwatt Pilot Experiment) were held at Paul Sherrer Institute (PSI), Switzerland in June 2011. In the meetings, PIE of the MEGAPIE target and the related hot-lab activities were reported. A gamma scan of the $AlMg_3$ safety hull tip was done and the obtained profile will be used for realistic calculations of dpa-rates. The ultrasonic thickness measurement of the tip of the beam window was performed. The information gained will give insight to erosion/corrosion issues at the beam entrance window. Preparation and cold test of segregation of LBE, cutting of the samples and sample cleaning were progressed. The revised sample extraction plan was distributed and it became clear that the sample transport will be scheduled for September 2012.

Fundamental Study for Flow Visualization in Liquid Metals

The beam window of ADS (Accelerator-driven System) is exposed at high temperature environment by the proton beam injection. For detailed design of ADS, grasping the behaviour of flowing LBE (Lead-Bismuth Eutectic alloy), which is a target/coolant material for JAEA-proposed ADS, is one of the important issues because the flow behaviour influences to not only the thermal-fluid behaviour but also the erosion/corrosion of structural materials. The flow behaviour of the coolant is normally predicted by the CFD (computational fluid dynamics) analysis. However, the development of the flow visualization techniques to verify the result of CFD analysis is insufficient because of the difficulties caused by the physical properties of liquid metal coolant especially in a high temperature operation.

The Transmutation Section has been developing flow visualization techniques. In the case of flow measurement of LBE, precise time resolution that can catch the turbulent fluctuation is required. The time resolution of the present ultrasonic technique based on the Doppler Effect is about several tens of millisecond[2]. In the case of our new technique, a velocity profile data is provided by two times of signal transmission and reception theoretically, then, time resolution improves drastically up to several milliseconds[3]. Figure 1 shows the experimental configuration using water at room temperature and measurement results by the new method (WCP: Window Chirp Method) compared to the present technique (PDM: Pulse Doppler Method). The notation “PNum” in the fugure is a number of emit/receive pulses per one measurement. The figure shows that the smallest PNum case (PNum=8), which means 3 milliseconds of time resolution in LBE, gives good agreement with the other results. The development of the WCP technique is continued and would be made use for the improvement of precision of the thermal-fluid analysis for the coolant system of ADS by obtaining the detailed experimental data of the flowing LBE.

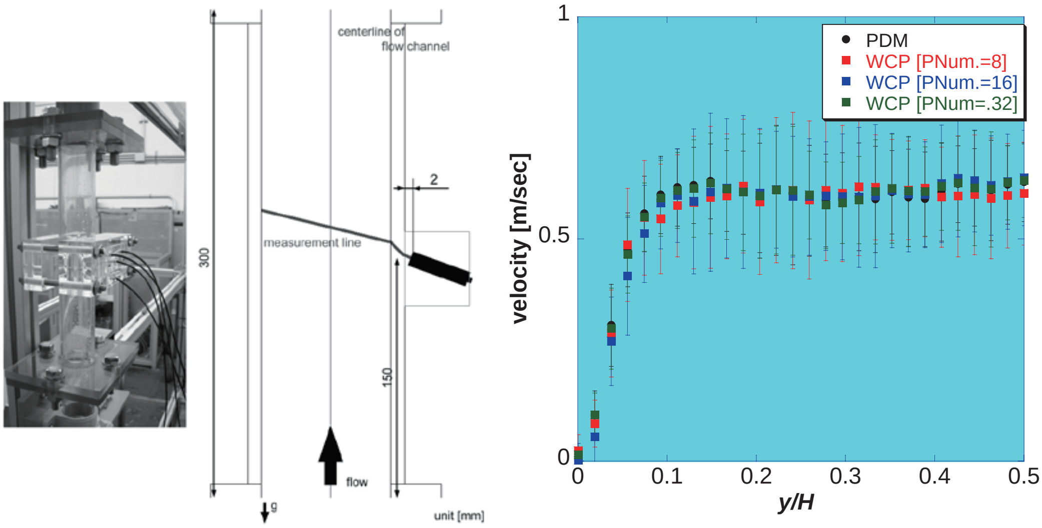


Fig. 1. Experimental configuration for water flow measurement and measurement result of comparison experiment with present technique, where bar of each data is velocity fluctuation.

Estimation of Beam Trip Frequencies

In the design study of ADS, one of the most important factors is to reduce the beam-trip frequency of high-power proton accelerator to an acceptable level. Experiences with existing high-power proton accelerators have shown that frequent beam trips have occurred. These beam trips may cause thermal fatigue in ADS components, which may lead to degradation of their structural integrity and shorten their lifetime. In our study, acceptable beam-trip frequencies of the ADS accelerator as a function of beam trip duration were evaluated. To evaluate the acceptable beam-trip frequencies, thermal transient analyses were made on the thermal responses of reactor components of ADS. By assuming 70% of annual plant availability, our results indicated three acceptable beam-trip frequencies, depending on the beam trip duration, t: 2×10^4 times per year for $0 = t = 10$ sec; 2×10^3 times per year for 10 sec < t = 5 min; and 42 times per year for t > 5 min.

In order to consider measures to reduce the beam-trip frequency, we also estimated the beam trip frequency for the ADS accelerator based on the operational data of the J-PARC LINAC,and compared it with the acceptable beam-trip frequency. Statistics on accidental interruptions of the J-PARC LINAC were obtained from the operational data from 16th October, 2010 to 11th March, 2011. The total operation time of the LINAC was 2,503 hours. The total number of accidental interruptions was 1,869. The comparison showed that for beam trips with a duration of 10 sec or shorter, the beam-trip frequency was acceptable. On the other hand, for beam trips with longer durations of 10 sec < t = 5 min and t > 5 min, it was necessary to reduce the beam-trip frequencies down to less than 1/3 and 1/10, respectively.

Development of Polonium Removal Equipment

One of the issues to be taken into account for LBE application is the safety management of polonium produced by neutron capture reactions of bismuth nuclei and/or spallation reactions of LBE. The radiological hazard of polonium is not small because polonium discharges alpha particles, so it should be considered in detail to ensure the safety of LBE-cooled nuclear systems. For the safety assessment of the Transmutation Experimental Facility planned in the J-PARC project, the decontamination characteristics of polonium should be specified with good accuracy. Experimental study was performed to estimate the decontamination efficiencies of the polonium by stainless steel mesh filter and to confirm whether it can be a useful device for the polonium removal in the gas phase or not[4].

The LBE samples were irradiated at the JRR-4 research reactor in JAEA. The estimated specific radioactivity by polonium-210 (138 days of half-life and emits alpha particle with energy of 5.3 MeV) in the samples was less than 50 Bq/g during the experiments. Two types of stainless wire meshes with different mesh pitch were used as polonium filters. The neutron-irradiated LBE sample in a graphite crucible was set into the heating device in the vacuum vessel shown in Fig.2 and was heated to melt the LBE to evaporate the polonium into gas phase. The radioactivity of polonium trapped by the mesh filter was measured by a semiconductor alpha-ray spectrometer.

It was shown that the DF (Decontamination Factor) of polonium was more than 170, which meant that 99.4% of polonium in the gas phase can be removed at 328 °C of filter temperature. The experiments confirmed that the stainless mesh filter can be a useful device for the removal of polonium.

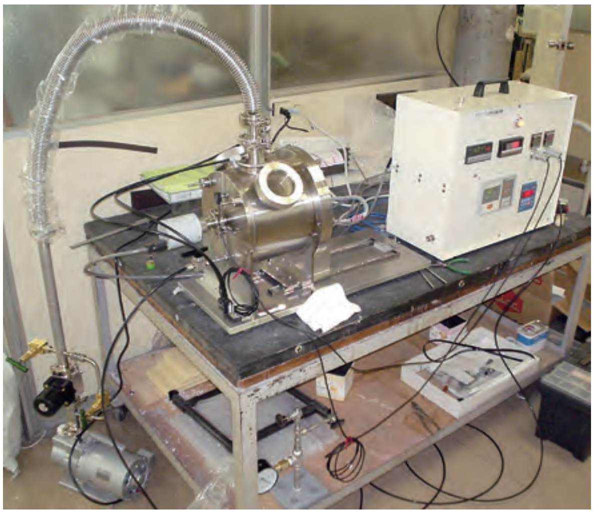


Fig. 2. Polonium evaporation test device

References

[1] S.Saito, K.Kikuchi, D.Hamaguchi, K.Usami, A.Ishikawa, Y.Nishino, S.Endo, M.Kawai, Y.Dai, "Proton irradiation effects on tensile and bend-fatigue properties of welded F82H specimens", J.Nucl. Mater., 398(2010)49–58.

[2] Y.Takeda, "Measurement of velocity profile of mercury flow by ultrasound Doppler shift method", Nucl. Tech.79, pp.120-124, 1987.

[3] Y.Takeda et al., "Ultrasonic Doppler Velocity Profiler for Fluid Flow", Springer, 2012. (under publication adjustment)

[4] T.Obara, Y.Yamazawa and T.Sasa, "Polonium decontamination performance of stainless steel mesh filter for lead alloy-cooled reactors", Prog. Nucl. Energy, 53, pp.1056-1060 (2011).

Safety

General Safety

The General Safety Section performs various types of crisis and occupational safety managements, and provides safety educations, training and drills in cooperation with the JAEA Nuclear Science Research Institute and the KEK Tokai Campus.

Specifically, it conducted the crisis management of the impact of the Great East Japan Earthquake in Japanese fiscal year (JFY) 2011.

Crisis Management

J-PARC was severely damaged in the Great East Japan Earthquake on March 11th, 2011. Fortunately, there were no human casualties, but many problems in the crisis management procedures were revealed on that day. As a result of these indications, the crisis management system, action plan, and equipment arrangement for disasters were mainly revised according to the Guidelines for Actions in the Event of Earthquakes. In the guidelines, a command post and an emergency assembly area were newly assigned at 15 m above sea level, to be used in case of a severe earthquake and tsunami warning. The provision for an expert meeting on fire and disaster prevention under the General Safety Review Board of J-PARC was established.

In November 2011, a special evacuation drill was carried out with the Nuclear Science Research Institute under the new guidelines, and over 600 participants were called-over in the drill at the emergency assembly area. Some problems such as equipment for called-over, were pointed out again (see Photos 1 and 2).

Safety Educations

In JFY 2011, the reconstruction of J-PARC has been speeded up to restart the operation from the end of 2011. Therefore, many accidents occurred during the crane work. In order to prevent further accidents, safety courses for those having the licenses of the crane operation and the slinging work were newly provided to operators, workers, supports and supervisors on February 6-7, 2012 and October 24-25, 2011, respectively. One hundred men in all took the courses. As a result, no more crane work accidents occurred.

Photo 1. Special evacuation drill (1).

Photo 2. Special evacuation drill (2).

Radiation Safety

A part of the radiation safety equipments in J-PARC were damaged by the earthquake disaster. The power and optical fiber cables laid underground between the building and the radiation area monitor got twisted as a result of the earthquake. Photo 3 shows an example of a damage caused by the earthquake. The base of the radiation area monitor subsided by about 50 centimeters. Photo 4 shows the radiation area monitor after the restoration work. New concrete base was placed, and the new power and the optical fiber cables were constructed. After completion of the restoration works of the radiation safety equipments, their normal operations could be restored because it was confirmed that their components were reliable.

J-PARC is managed under the Law Concerning Prevention from Radiation Hazards Due to Radio-Isotopes, etc. in the Japanese legal system. A license for its use must be issued by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), and the related safety inspection must be conducted by the Nuclear Safety Technology Center (NUSTEC). Table 1 shows lists of licenses at the end of fiscal year 2010 and application items for license in JFY 2011.

The 11th Radiation Safety Committee of J-PARC met on July 29, 2011 and discussed the alterative application of the J-PARC facilities. The main topic was the new secondary beam line (BL-09) in MLF. These applications were submitted to MEXT on Sep. 16, 2011. The application for the operation of all the facilities was approved by MEXT on Nov. 25, 2011.

The 12th Radiation Safety Committee of J-PARC met on Dec. 2, 2011 and inspected the status of the equipments on the secondary beam lines of the experimental facilities (MLF, Hadron Experimental Facility (HD)).

The inspection of MLF was conducted successfully on Feb. 6 and 7, 2012 by NUSTEC: the items to be inspected were the working conditions of the emergency and interlock signals from the new secondary beam lines (U-Line and BL-09) and the shielding structures and measurements of ambient doses around the radiation control areas.

The inspection of HD was conducted successfully on Feb. 21, 2012, by NUSTEC: the items to be inspected were the shielding structures and measurements of ambient doses around the radiation control areas. This inspection was related to the application submitted in 2010.

Figure 1 shows the transition of the number of radiation workers since 2005. In JFY 2011, 2633 individuals were registered as radiation workers in J-PARC. Table 2 shows the distribution of annual doses by type of workers. The radiation exposure of the workers has been monitored individually with glass dosimeters and solid state nuclear track detectors. Almost all the records for individual exposure were undetectable, while 126 persons (4.8% of the workers) were recorded to have received less than 5.0 mSv.

Photo 3. Radiation area monitor above the 3NBT Dump.

Photo 4. Radiation area monitor after the restoration work.

Table 1. License at the end of fiscal year 2010 and application items for license in fiscal year 2011.

	License at the end of fiscal year 2010	Application items for license in fiscal year 2011
MLF	Power : 3 GeV/320 kW Secondary beam lines (neutron) : 17 Secondary beam lines (muon) : 1	Secondary beam lines (neutron) : 1
HD	Power : 30 GeV/50 kW Secondary beam lines (meson) : 4	
Neutrino facilities	Power : 30 GeV/300 kW	

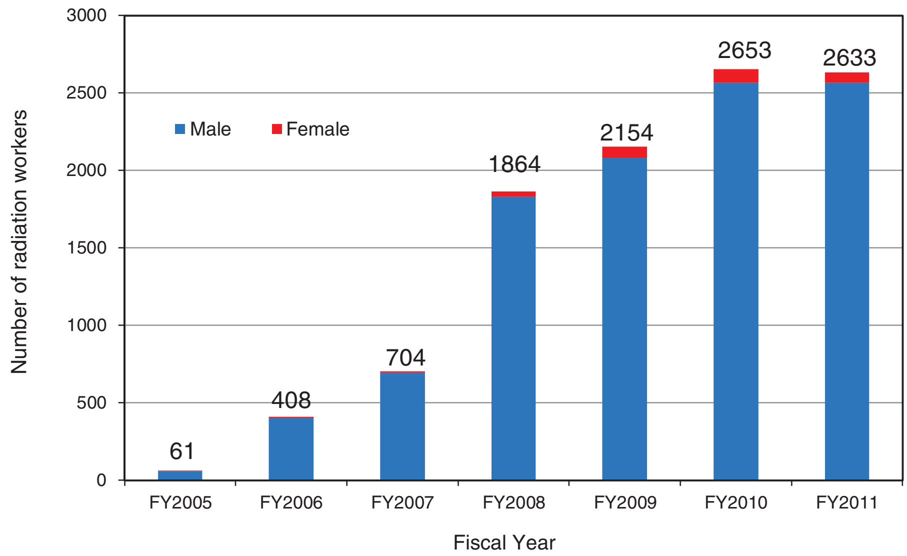
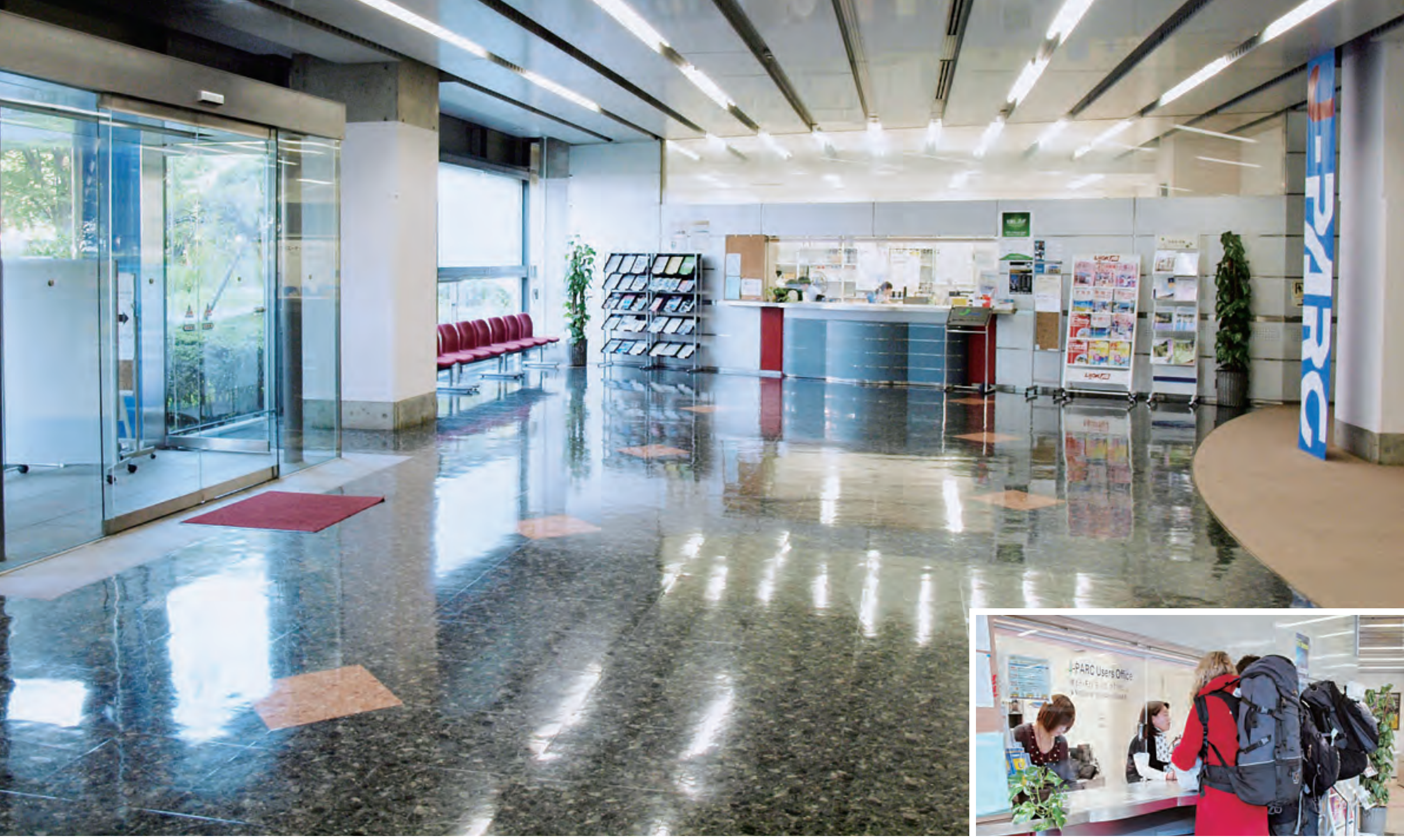


Fig. 1. Transition of the number of radiation workers.

Table 2. Distribution of annual doses by the type of worker in fiscal year 2011.

	Dose range (mSv)						Collective dose (person-mSv)	Average dose (μSv)
	Undetectable	0.1 - 0.5	>0.5 - 1.0	>1.0 - 5.0	>5.0+	Total worker		
In-house staff	544	26	9	0	0	579	12.3	21.2
User	397	0	0	0	0	397	0	0
Contractor	1566	63	19	9	0	1657	44.4	26.8
Total	2507	89	28	9	0	2633	56.7	21.5



Users Office

The Japanese fiscal year (JFY) 2011 for the J-PARC Center Users Office (UO) started with the catastrophic consequences of the massive earthquake casting a dark shadow over it. The number of the users in April, counted by person-days, was 167 as opposed to the previous year's 2620. However an ambitious recovery plan was developed and implemented and beam was extracted to the neutron and neutrino experimental facilities on schedule in December 2011. Although the number of annual users in JFY 2011 counted by person-days was 15,539, down about 46% from the previous year, the number of users increased rapidly in January 2011 to more than the level of the previous year.

Talking about JFY 2011, we incline to focus on the consequences of the massive earthquake and the process of recovery. However UO staffs committed themselves mostly to conducting, in JFY 2011, UO business which had been developed since its inception. That is why we need to focus on it to report the activities UO conducted in JFY 2011. The prime purpose of J-PARC is to conduct cutting-edge research in various scientific fields using the secondary beams. The fields includes, but are not restricted to, a) nuclear and particle physics, b) materials and life science, and c) R&D for nuclear transformation. Four different secondary beams have already been offered; neutron (since May, 2008); muon (since September, 2008); kaon (since February, 2009); and neutrino (since April, 2009). As the stability and the types of available beams have increased, many users from all over the world have come to work at J-PARC. Although the purposes of their visits or the experimental facilities they use differ, UO has been making efforts to provide lucid procedures or service. Among them are proposal submission, proposal review notification, user registration, pre-visit procedures, procedures upon arrival and post-visit procedures. Web-based systems have been adopted and operated as one of the effective ways to achieve our aim and three system engineers have been engaged in their operation and development. Although the systems enable the J-PARC Users to conduct most of the procedures through the web page, there are manual work jobs UO staffs need to do, which UO staffs committed themselves to in JFY 2011.

The following are the details of the work UO performed in JFY2011.

User Registration and Pre-visit Procedures

The first procedure, in which the users are involved, is user registration. When we received a user registration, we confirmed its eligibility and approved it through the systems, which enabled the user to proceed to the next step which includes application for a J-PARC visit. The application for a J-PARC visit includes an application for accommodation reservation. The main accommodation for users has been the Tokai dormitory which opened in January 2011. Online booking was available and a room number for each user was automatically assigned. But sometimes we used to receive inquiries about sudden booking or sudden check in/out day change which the system could not accept. In those cases we did what we could to meet the requests, sometimes booking rooms or changing the check in/out days after the deadline. In case of full occupancy at the Tokai dormitory when users requested that we book another accommodation we had, we asked the department in charge to provide alternative options. Users who are scheduled to work at radiation controlled areas apply for individual dosimeters. When we received the applications, we checked and forwarded them to the department responsible for issuing individual dosimeters and arranged and conducted safety instructions for work at J-PARC. We issued a temporary J-PARC User ID Card to users who were scheduled to get on the J-PARC shuttle bus before getting the J-PARC User ID Card. Foreign users need to submit a Foreign National Visit Proposal. We checked its eligibility followed by an approval from the person in charge. We issued car driving permission pass to users who needed to go into the J-PARC site by their cars. And when they needed to enter the experimental facilities after the office hours or during the weekend, we issued J-PARC card keys for unlocking them. There were some users who needed letter of guarantee or certificate of eligibility to get visa. We issued the letters or applied for certificates of eligibility with an immigration bureau to help them get a visa. As for travel expenses support, inter-university research users whom KEK had accepted were able to apply for travel expenses. Having received the applications, we calculated the amount of it.

Procedures Upon Arrival

Since UO provides one-stop services to users, they come to UO before starting works at J-PARC to receive a J-PARC User ID Card, individual dosimeter, car driving permission pass or J-PARC card key. For those who could not come to UO during the office hours (9:00-17:00), we arranged for them a pick up at the JAEA main gate 24 hours a day. We lent out bikes and PHS (handy phone for internal calls at J-PARC). Those who could not return them to UO during the office hours could drop them into a return box standing beside UO.

Post-visit Procedures

When a MLF experiment is completed, the principal investigator needs to submit a MLF machine time completion form via the User Support System. We checked and forwarded them to the persons who approved them. In the case of nonproprietary use, a principal investigator needs to submit a MLF experimental report via the result management system within 60 days from the day the MLF machine time completion form is approved. UO checks and forwards them to the persons who approved them.

User Statistics

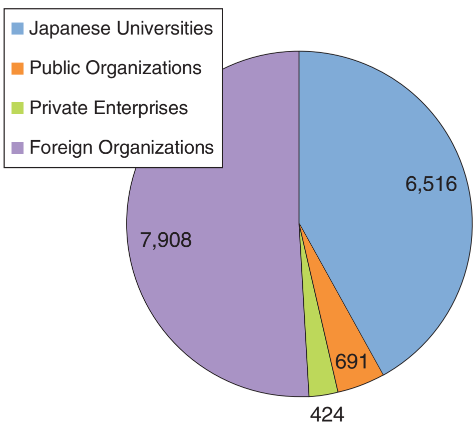
Collecting fundamental user statistics was an integral part of the UO tasks. They were helpful when we needed to explain the work of UO or J-PARC to visitors, government ministries, and executives of JAEA or KEK. So we updated them regularly. When other user statistics were necessary, we produced them.

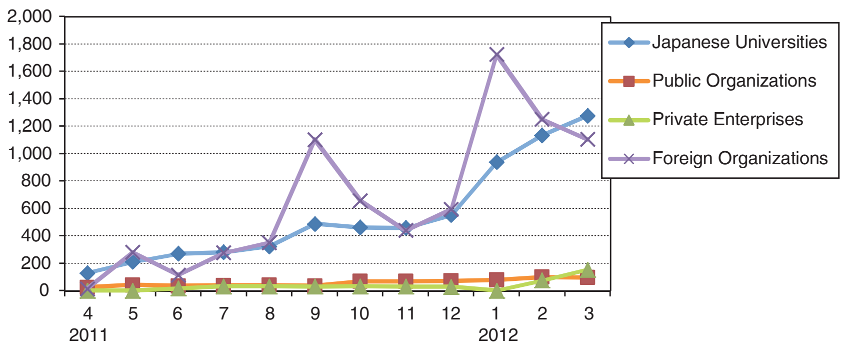
Others

We closed the Tokai dormitory's books every day.

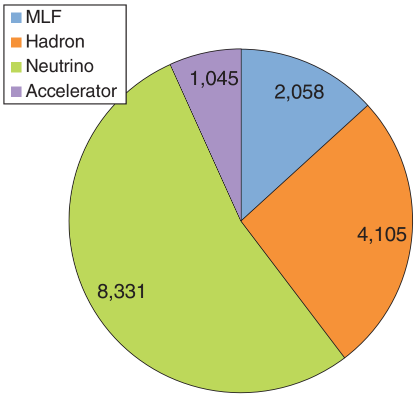
When users got sick or injured and wanted to go to a hospital, we took them to it.

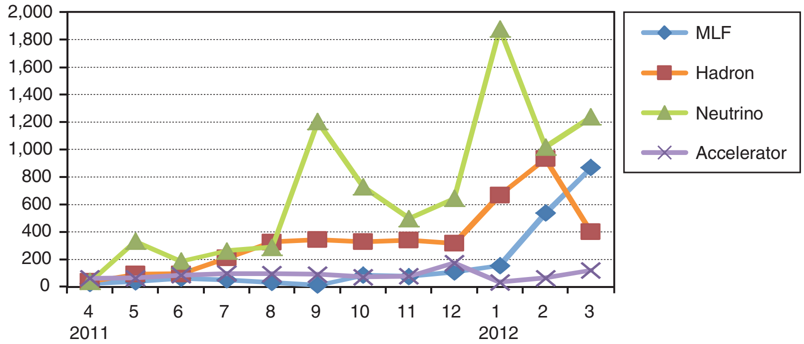
(1) Users in 2011 (according to organizations, person-days)



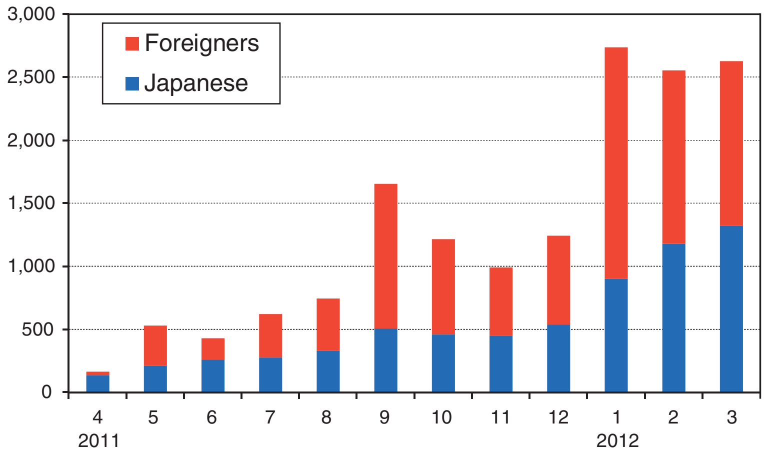


(2) Users in 2011 (according to facilities, person-days)



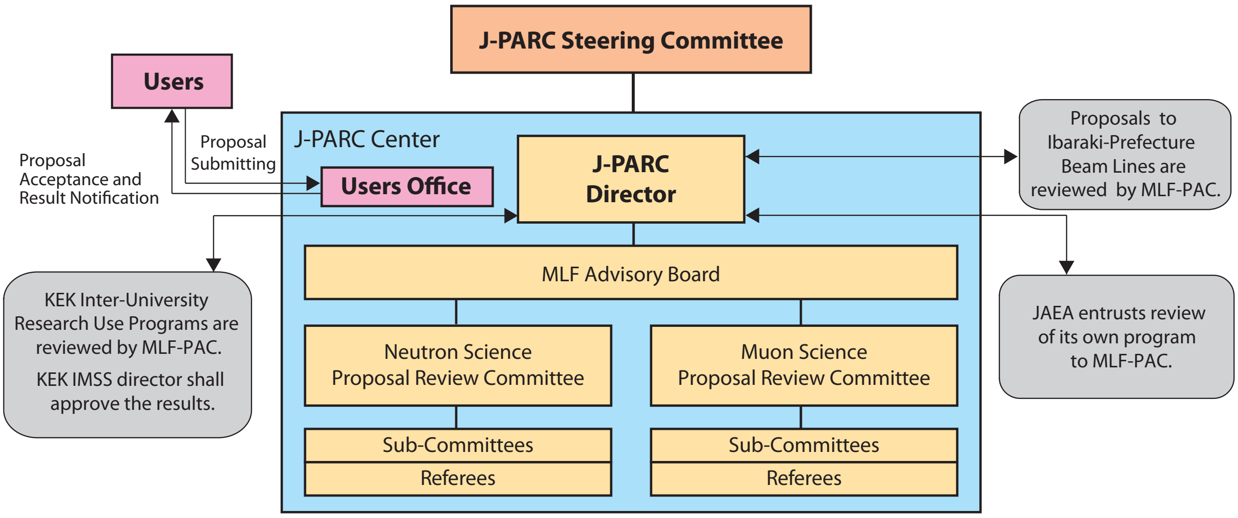


(3) Users in 2011 (Japanese · Foreiners, person-days)



User Program

1. Proposal Reviewing System for the MLF User Program



Call for proposals for the first half of 2011 (2011A term): Nov. 17 - Dec. 7, 2010
The review results were announced on April 28, 2011.

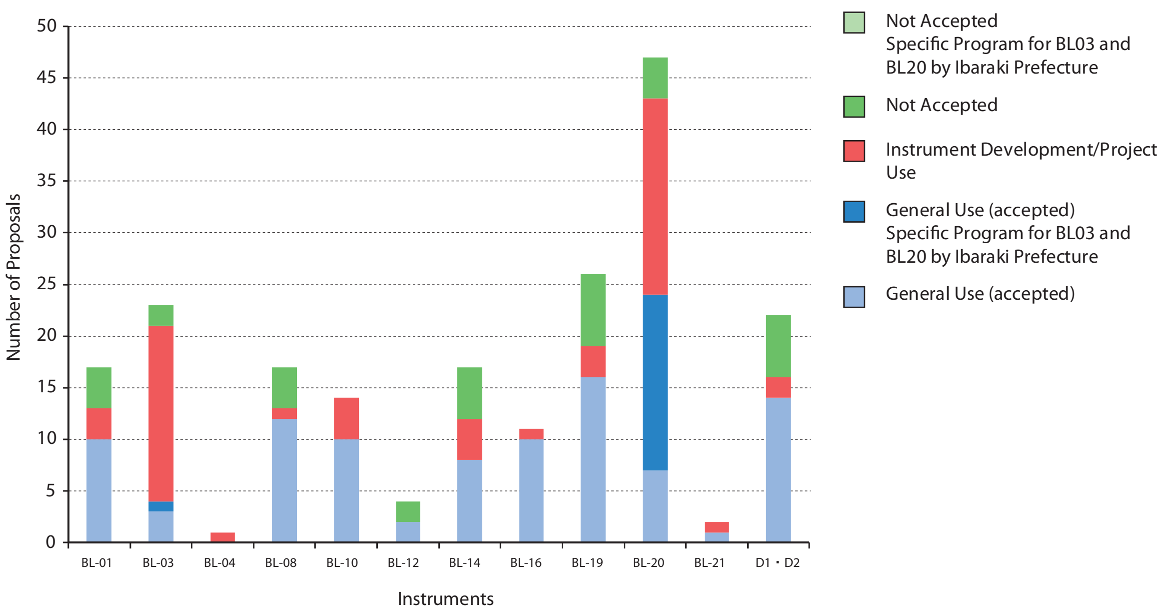
Call for proposals for the second half of 2011 (2011B term): July 17 - Aug. 7, 2011
The review results were announced on December 22, 2011.

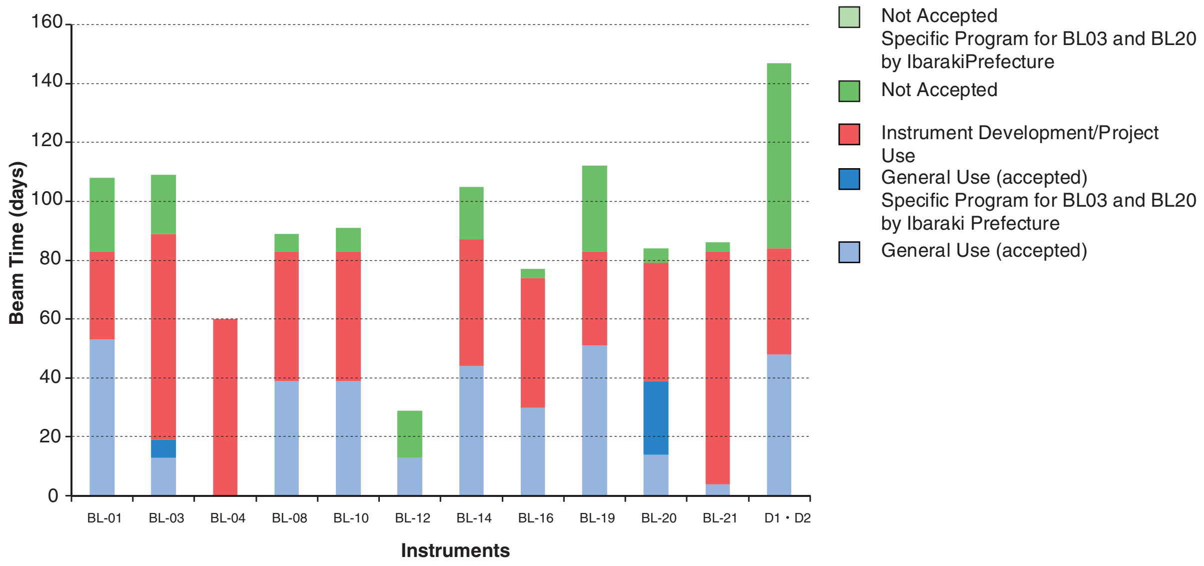
2. Summary of Applications and Results (MLF)

The number of proposals and beam time for each neutron and muon instrument are summarized in Fig. 2, 3, 4 and 5. For the neutron instruments BL-03 and BL-20 operated by Ibaraki Prefecture, a specific program is conducted by Ibaraki Prefecture separately. The statistics for the specific program provided by Ibaraki prefecture is also included in this summary.

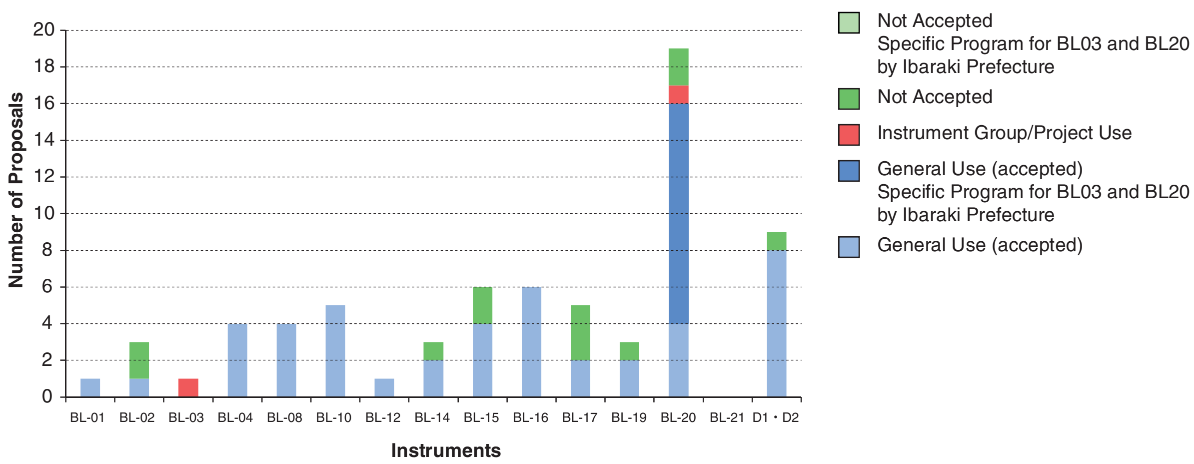
Ambitious recovery plan from massive earthquake took us about 9 months to extract beam to neutron experimental facilities, which is why no 2011A beam time was actually allocated and proposals and beam time for 2011B were less than had been expected.

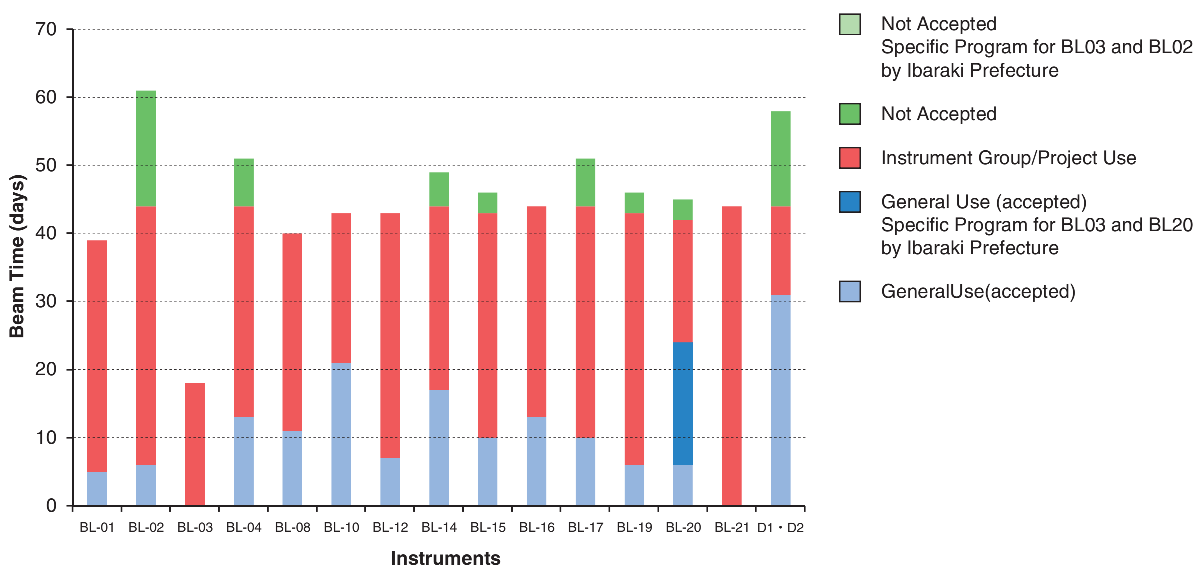
(1) 2011A




Beam Time (days)
Instruments
BL-01 BL-03 BL-04 BL-08 BL-10 BL-12 BL-14 BL-16 BL-19 BL-20 BL-21 D1・D2
Not Accepted Specific Program for BL03 and BL20 by IbarakiPrefecture
Not Accepted
Instrument Development/Project Use
General Use (accepted) Specific Program for BL03 and BL20 by Ibaraki Prefecture
General Use (accepted)

(2) 2011B


Number of Proposals
Instruments
BL-01 BL-02 BL-03 BL-04 BL-08 BL-10 BL-12 BL-14 BL-15 BL-16 BL-17 BL-19 BL-20 BL-21 D1・D2
Not Accepted Specific Program for BL03 and BL20 by Ibaraki Prefecture
Not Accepted
Instrument Group/Project Use
General Use (accepted) Specific Program for BL03 and BL20 by Ibaraki Prefecture
General Use (accepted)


Beam Time (days)
Instruments
BL-01 BL-02 BL-03 BL-04 BL-08 BL-10 BL-12 BL-14 BL-15 BL-16 BL-17 BL-19 BL-20 BL-21 D1・D2
Not Accepted Specific Program for BL03 and BL02 by Ibaraki Prefecture
Not Accepted
Instrument Group/Project Use
General Use (accepted) Specific Program for BL03 and BL20 by Ibaraki Prefecture
GeneralUse(accepted)

3. Access Mode for MLF Use

(1) General use

The general use provides both national and international users with an opportunity to conduct experiments using instruments of MLF. A variety of experiments not only for academic researches but also for industrial applications are acceptable. The applicants must be an employee of or affiliated with a legal organization or entity that may be any of the following:

- A public or private college, university or other institution of higher education;
- A public or not-for-profit research organization;
- A private company

A post-doctoral fellow is also eligible to submit proposals under the permission of his/her manager or supervisor at the home institute/organization to conduct research activity at MLF. Students or persons who do not belong to any institution/organization are not eligible for the position of a principal investigator.

(2) Project use

The project use is the access mode in which JAEA and KEK conduct their mission oriented programs such as inclusive scientific research projects, research programs proposed to fulfill the plans for the midterm goals of JAEA, joint research programs and contract research programs with another institute(s)/organization(s).

The experimental proposals requesting beamtime longer than one year can be applicable for the project use.

The principal investigator of the project use is limited to the personnel belonging to either JAEA or KEK, or the person approved by the director of the J-PARC Center.

(3) Instrument group use

The instrument group use is the access mode for instrument scientists responsible for the beam-line instruments.

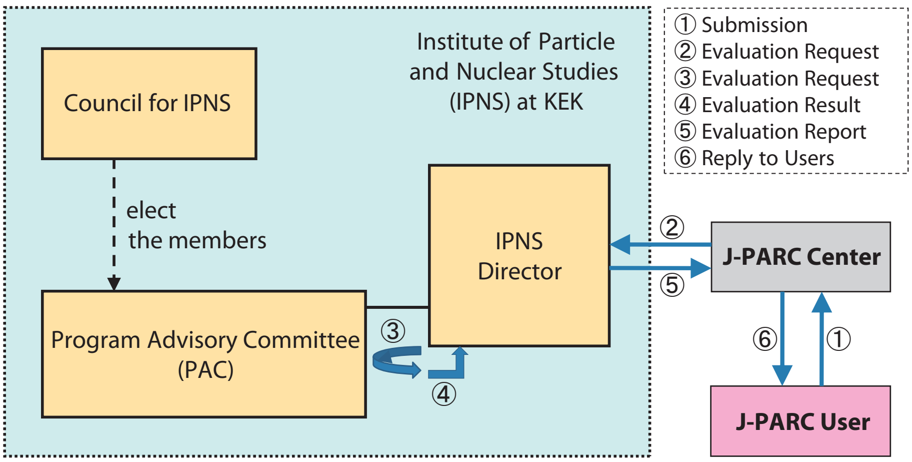
The instruments group shall maintain and/or improve the performance of their instrument, and conduct the leading-edge research and development whose output shall ensure maximal performance of the instrument so that MLF can always provide the users with the most superior experimental environments.

4. Types and Categories of MLF Use

In principle, a call for proposals for the MLF use will be conducted periodically as "Regular proposal". The other optional proposals, such as "Urgent proposal" and "Rapid access proposal", are proposals designed to address the need for research, which is important and urgent.

There are two categories to access to these proposals at MLF. One is the nonproprietary use in which no beamtime fee is charged for the peer-reviewed proposal as long as the user publish the result obtained through the MLF use in the open literature. The other is the proprietary use in which users can get exclusive rights to possess their results for economic benefit by paying beamtime fee to J-PARC Center. The beamtime fee is determined on the basis of the full cost recovery.

5. Process for Approving Experimental Programs in Particle and Nuclear Physics



The twelfth Program Advisory Committee (PAC) meeting was held on July 8 – 10, 2011.
The thirteenth PAC meeting was held on January 13 – 15, 2012.
The fourteenth PAC meeting was held on March 16 – 17, 2012.

6. Approval Summary of the Particle and Nuclear Physics Experiments After the 13-th Meeting (January 13, 2012)

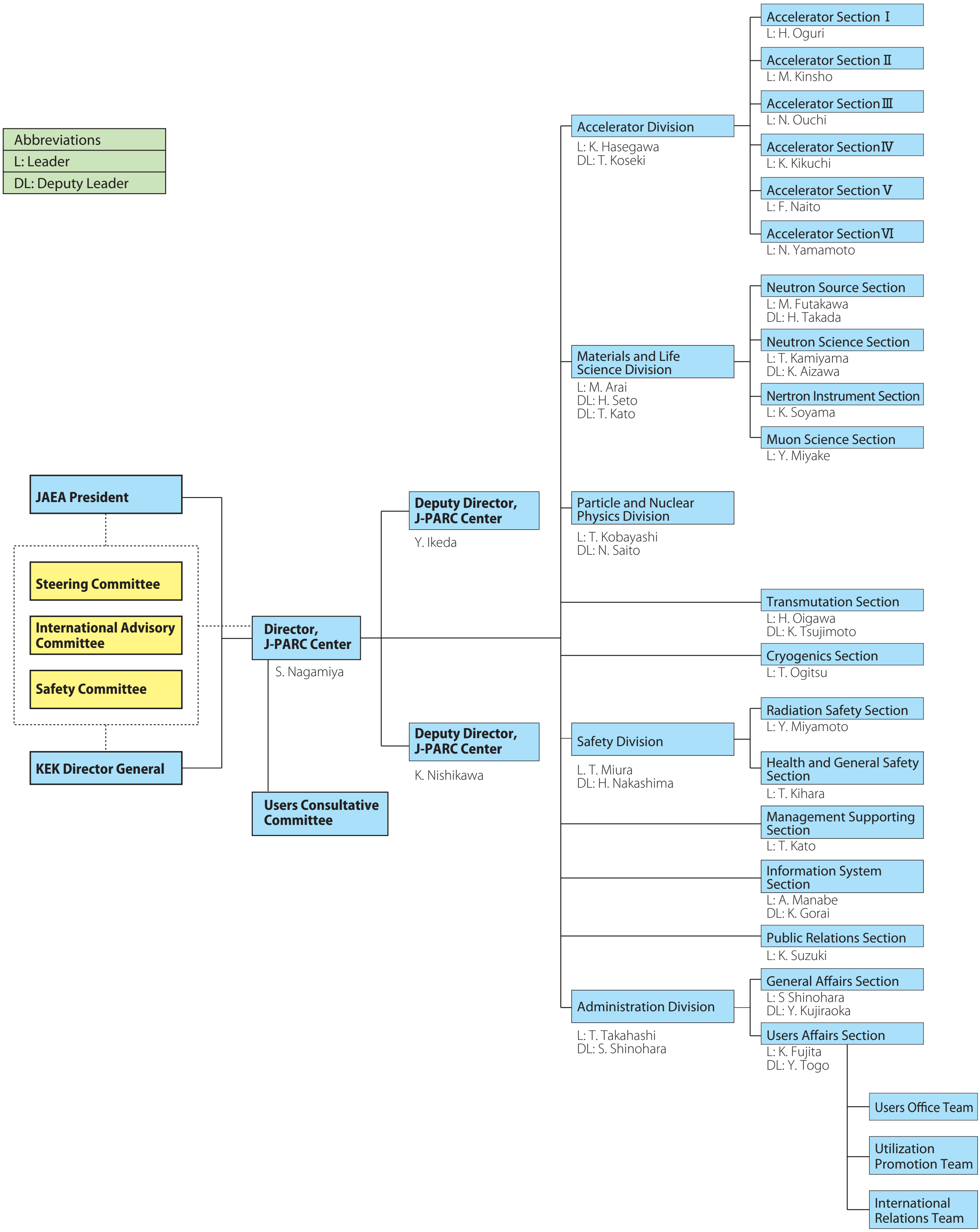
	(Co-) Spokespersons	Affiliation	Title of the experiment	Approval status (PAC recommendation)	Slow line priority		Beamline
					Day1	Day1 Priority	
E03	K.Tanida	SNU	Measurement of X rays from X- Atom	Stage 2			K1.8
P04	J.C.Peng; S.Sawada	U.of Illinois at Urbana-Champaign; KEK	Measurement of High-Mass Dimuon Production at the 50-GeV Proton Synchrotron	Deferred			Primary
E05	T.Nagae	Kyoto U	Spectroscopic Study of X-Hypernucleus, 12XBe, via the 12C(K^-, K^+) Reaction	Stage 2	Day1	1	K1.8
E06	J.Imazato	KEK	Measurement of T-violating Transverse Muon Polarization in $K^+ \rightarrow \pi^0 m^+ n$ Decays	Stage 1			K1.1BR
E07	K.Imai, K.Nakazawa, H.Tamura	JAEA, Gifu U, Tohoku U	Systematic Study of Double Strangeness System with an Emulsion-counter Hybrid Method	Stage 2			K1.8
E08	A.Krutenkova	ITEP	Pion double charge exchange on oxygen at J-PARC	Stage 1			K1.8
E10	A. Sakaguchi, T. Fukuda	Osaka U	Production of Neutron-Rich Lambda-Hypernuclei with the Double Charge-Exchange Reaction (Revised from Initial P10)	Stage 2			K1.8
E11	T. Kobayashi	KEK	Tokai-to-Kamioka (T2K) Long Baseline Neutrino Oscillation Experimental Proposal	Stage 2			neutrino
E13	T.Tamura	Tohoku U	Gamma-ray spectroscopy of light hypernuclei	Stage 2	Day1	2	K1.8
E14	T.Yamanaka	Osaka U	Proposal for $K_L \rightarrow \pi^0 \nu \bar{\nu}$ Experiment at J-PARC	Stage 2			KL
E15	M.Iwasaki, T.Nagae	RIKEN, Kyoto U	A Search for deeply-bound kaonic nuclear states by in-flight ^{3}He(K^-, n) reaction	Stage 2	Day1		K1.8BR
E16	S.Yokkaichi	RIKEN	Electron pair spectrometer at the J-PARC 50-GeV PS to explore the chiral symmetry in QCD	Stage 1			High p
E17	R.Hayano, H.Outa	U Tokyo, RIKEN	Precision spectroscopy of Kaonic ^{3}He 3d->2p X-rays	Stage 2	Day1		K1.8BR
E18	H.Bhang, H.Outa, H.Park	SNU, RIKEN, KRISS	Coincidence Measurement of the Weak Decay of $^{12}\Lambda$C and the three-body weak interaction process	Stage 2			K1.8
E19	M.Naruki	KEK	High-resolution Search for Θ^+ Pentaquark in π-p -> K-X Reactions	Stage 2	Day1		K1.8
E21	Y.Kuno	Osaka U	An Experimental Search for $\mu - e$ Conversion at a Sensitivity of 10^{-16} with a Slow-Extracted Bunched Beam	Stage 1			New beamline
E22	S. Ajimura, A.Sakaguchi	Osaka U	Exclusive Study on the Lambda-N Weak Interaction in A=4 Lambda-Hypernuclei (Revised from Initial P10)	Stage 1			K1.8
T25	S.Mihara	KEK	Extinction Measurement of J-PARC Proton Beam at K1.8BR	Test Experiment	will be coordinated by JPNC		K1.8BR
P26	K.Ozawa	U Tokyo	Search for ω-meson nuclear bound states in the π-+AZ -> n+(A-1) ω(Z-1) reaction, and for ω mass modification in the in-medium $\omega \rightarrow \pi 0 \gamma$ decay	Stage 1			K1.8
E27	T.Nagae	Kyoto U	Search for a nuclear Kbar bound state K^-pp in the d(π^+, K^+) reaction	Stage 2			K1.8
P29	H.Ohnisi	RIKEN	Search for ϕ-meson nuclear bound states in the $\bar{p}$ + AZ -> ϕ + (A-1) ϕ(Z-1) reaction	Stage 1			K1.1
E31	M.Noumi	Osaka U	Spectroscopic study of hyperon resonances below KN threshold via the (K^-, n) reaction on Deuteron	Stage 1			K1.8BR
T32	A. Rubbia	ETH, Zurich	Towards a Long Baseline Neutrino and Nucleon Decay Experiment with a next-generation 100 kton Liquid Argon TPC detector at Okinoshima and an intensity upgraded J-PARC Neutrino beam	Test Experiment	schedule and beam time will be coordinated by JPNC		K1.1BR
P33	H. M. SHIMIZU	KEK	Measurement of Neutron Electric Dipole Moment	Deferred			Linac
P34	N. Saito, M. Iwasaki	KEK, RIKEN	An Experimental Proposal on a New Measurement of the Muon Anomalous Magnetic Moment g-2 and Electric Dipole Moment at J-PARC	Stage 1			MLF
E36	S.Shimizu	Osaka	Measurement of $\Gamma(K^+ \rightarrow e+\nu)/\Gamma(K^+ \rightarrow \mu+\nu)$ and Search for heavy sterile neutrinos using the TREK detector system	Stage 1			K1.1BR
P40	K.Miwa	Tohoku U	Measurement of the cross sections of Σp scatterings	Stage 1			K1.8

	(Co-) Spokespersons	Affiliation	Title of the experiment	Approval status (PAC recommendation)	Slow line priority		Beamline
					Day1	Day1 Priority	
P41	M.Aoki	Osaka U	An Experimental Search for μ – e Conversion in Nuclear Field at a Sensitivity of 10–14 with Pulsed Proton Beam from RCS	Deferred			MLF
P42	J.K. Ahn	Pusan National U	Search for H-Dibaryon with a Large Acceptance Hyperon Spectrometer	Deferred			K1.8
T43	K.Aoki	RIKEN	Test of Hadron Blind Detector and GEM Tracker for the J-PARC E16 Experiment	Test Experiment			K1.1BR
P39	K.Sakashita	KEK	A study of water Cherenkov detector for counting the number of neutrino at Near detector hall of J-PARC neutrino beam-line	to be Decided by E11 and Lab			neutrino
P40	K.Miwa	Tohoku U	Measurement of the cross sections of Σp scatterings	Deferred			K1.8
P41	M.Aoki	Osaka U	An Experimental Search for μ - e Conversion in Nuclear Field at a Sensitivity of 10-14 with Pulsed Proton Beam from RCS	Deferred			MLF

Organization and Committees

Organization Structure

(as of April 2011)



Members of the Committees Organized for J-PARC

(as of March, 2012)

1) Steering Committee

Hideo Hirayama	High Energy Accelerator Research Organization, Japan
Toshio Ichimura	Japan Atomic Energy Agency, Japan
Yukihide Kamiya	High Energy Accelerator Research Organization, Japan
Shoji Nagamiya	J-PARC Center, Japan
Hideki Namba	Japan Atomic Energy Agency, Japan
Sohei Okada	Japan Atomic Energy Agency, Japan
Osamu Shimomura	High Energy Accelerator Research Organization, Japan
Yasuhide Tajima	Japan Atomic Energy Agency, Japan
Fumihiko Takasaki	High Energy Accelerator Research Organization, Japan
Hideaki Yokomizo	Japan Atomic Energy Agency, Japan
Keisuke Yoshio	High Energy Accelerator Research Organization, Japan

2) International Advisory Committee

Ian Anderson	Oak Ridge National Laboratory, USA
Sergio Bertolucci	CERN, Switzerland
Bernard Frois	CEA-Saclay, France
Hidetoshi Fukuyama	Tokyo University of Science, Japan
Young-Kee Kim	Fermi National Accelerator Laboratory, USA
Hugh Montgomery	Thomas Jefferson National Accelerator Facility, USA
Jean-Michel Poutissou	TRIUMF, Canada (chair)
Thomas Roser	Brookhaven National Laboratory, USA
Tsumoru Shintake	Okinawa Institute of Science and Technology Graduate University, Japan
Hoerst Stoecker	GSI, Germany
Tomohiko Iwasaki	Tohoku University, Japan
Andrew Taylor	Rutherford Appleton Laboratory and ISIS, UK
Eiko Torikai	University of Yamanashi, Japan
John W. White	Australian National Laboratory, Australia

3) User Consultative Committee for J-PARC

Hiroaki Aihara	University of Tokyo, Japan
Masatoshi Arai	Japan Atomic Energy Agency, Japan
Hideto Enyo	RIKEN, Japan
Yasuhiko Jujii	CROSS, Japan
Toshiharu Fukunaga	Kyoto University, Japan
Makoto Hayashi	Ibaraki Prefecture, Japan
Tomohiko Iwasaki	Tohoku University, Japan
Shinichi Kamei	Mitsubishi Research Institute, Inc., Japan
Toshiji Kanaya	Kyoto University, Japan
Yoshiaki Kiyanagi	Hokkaido University, Japan
Takashi Kobayashi	High Energy Accelerator Research Organization, Japan
Yasuhiro Miyake	High Energy Accelerator Research Organization, Japan
Tomofumi Nagae	Kyoto University, Japan
Tsuyoshi Nakaya	Kyoto University, Japan
Kazuma Nakazawa	Gifu University, Japan
Nobuhiko Nishida	Tokyo Institute of Technology, Japan
Kazumi Nishijima	Mochida Pharmaceutical Co., Ltd., Japan
Naohito Saito	High Energy Accelerator Research Organization, Japan
Mamoru Sato	Yokohama City University, Japan
Mitsuhiro Shibayama	University of Tokyo, Japan
Jun Sugiyama	Toyota Central R&D Labs., Inc., Japan
Hirokazu Tamura	Tohoku University, Japan
Eiko Torikai	Yamanashi University, Japan
Kazuyoshi Yamada	Tohoku University, Japan
Taku Yamanaka	Osaka University, Japan

4) Accelerator Technical Advisory Committee

David Findlay	Rutherford Appleton Laboratory, UK
John Galambos	Oak Ridge National Laboratory, USA
Ronald Garoby	CERN, Switzerland
Stephen Holmes	Fermi National Laboratory, USA
Akira Noda	Kyoto University, Japan
Peter Ostroumov	Argonne National Laboratory, USA
Uli Ratzinger	Frankfurt University, Germany
Thomas Roser	Brookhaven National laboratory, USA (chair)
Jie Wei	Michigan State University, USA

5) Neutron Advisory Committee

Kurt Clausen	Paul Scherrer Institut, Switzerland
John Haines	Oak Ridge National Laboratory, USA
Toshiji Kanaya	Kyoto University, Japan
Mahn Won Kim	KAIST, Korea
Yoshiaki Kiyanagi	Hokkaido University, Japan
Dan Neumann	National Institute of Standards and Technology, USA (chair)
Robert Robinson	Australian Nuclear Science and Technology Organization, Australia
Uschi Steigenberger	ISIS, UK
Werner Wagner	Paul Scherrer Institute, Switzerland

6) Muon Science Advisory Committee

Jun Akimitsu	Aoyama Gakuin University, Japan
Hiroshi Amitsuka	Hokkaido University, Japan
Robert Cywinski	University of Huddersfield, UK
Elvezio Morenzoni	Paul Scherrer Institute, Switzerland (chair)
Jean-Michel Poutissou	TRIUMF, Canada (chair)
Atsushi Shinohara	Osaka University, Japan
Jeff E. Sonier	Simon Fraser University, Canada
Eiko Torikai	University of Yamanashi, Japan

7) Radiation Safety Committee

Yoshihiro Asano	RIKEN, Japan
Shuichi Ban	High Energy Accelerator Research Organization, Japan
Hideo Hirayama	High Energy Accelerator Research Organization, Japan
Kenjiro Kondo	High Energy Accelerator Research Organization, Japan
Takeshi Murakami	National Institute of Radiological Science, Japan
Tetsuo Noro	Kyushu University, Japan
Takeo Oku	Japan Atomic Energy Agency, Japan
Kotaro Satoh	High Energy Accelerator Research Organization, Japan
Seiichi Shibata	Kyoto University, Japan (chair)
Toshio Ichimura	Japan Atomic Energy Agency, Japan
Yoshitomo Uwamino	RIKEN, Japan
Yoshihiro Yamaguchi	Japan Atomic Energy Agency, Japan

8) MLF Advisory Board

Masatoshi Arai	Japan Atomic Energy Agency, Japan
Yasuhiko Fujii	CROSS, Japan
Toshiharu Fukunaga	Kyoto University, Japan
Masatoshi Futakawa	Japan Atomic Energy Agency, Japan
Makoto Hayashi	Ibaraki Prefecture, Japan
Mitsuhiro Hirai	Gunma University, Japan
Susumu Ikeda	High Energy Accelerator Research Organization, Japan
Yujiro Ikeda	Japan Atomic Energy Agency, Japan
Kazuaki Iwasa	Tohoku University, Japan
Masahiko Iwasaki	RIKEN, Japan
Ryosuke Kadono	High Energy Accelerator Research Organization, Japan
Kazuhisa Kakurai	Japan Atomic Energy Agency, Japan
Shinichi Kamei	Mitsubishi Research Institute, Inc., Japan
Takashi Kamiyama	High Energy Accelerator Research Organization, Japan
Toshiji Kanaya	Kyoto University, Japan
Takashi Kato	Japan Atomic Energy Agency, Japan
Yoji Koike	Tohoku University, Japan
Yasuhiro Miyake	High Energy Accelerator Research Organization, Japan
Junichiro Mizuki	Japan Atomic Energy Agency, Japan
Toshiya Ohtomo	High Energy Accelerator Research Organization, Japan
Hideki Seto	High Energy Accelerator Research Organization, Japan
Mitsuhiro Shibayama	University of Tokyo, Japan
Jun Sugiyama	Toyota Central R&D Labs., Inc., Japan
Eiko Torikai	University of Yamanashi, Japan
Kazuyoshi Yamada	Tohoku University, Japan

9) Nuclear and Particle Physics Experiments at the J-PARC 50GeV Proton Synchrotron Advisory Committee

Ikaros I. Bigi	University of Notre Dame, USA
Avraham Gal	The Hebrew University of Jerusalem, Israel
Tadafumi Kishimoto	Osaka University, Japan
Konrad Kleinknecht	Mainz University, Germany
Shunzo Kumano	High Energy Accelerator Research Organization, Japan
Toshinori Mori	University of Tokyo, Japan
Tomofumi Nagae	Kyoto University, Japan
Yasuki Nagai	Osaka University, Japan
Satoshi Nakamura	Tohoku University, Japan
Matthias Gross Perdekamp	University of Illinois, USA
Michael Shaevitz	Colunbia University, USA
Susumu Shimoura	University of Tokyo, Japan
Katsuo Tokushuku	High Energy Accelerator Research Organization, Japan
Robert S. Tschirhart	Fermi National Accelerator Laboratory, USA
Hitoshi Yamamoto	Tohoku University, Japan

Main Parameters

Present main parameters of Accelerator

Linac	
Acclerated . Particles	Negative hydrogen
Energy	181 MeV
Peak Current	15 mA
Pulse Width	0.5 ms
Repetition Rate	25 Hz
Freq. of RFX, DTL, and SDTL	324 MHz
RCS	
Circumference	348.333 m
Injection Energy	181 MeV
Extraction Energy	3 GeV
Repetition Rate	25 Hz
RF Frequency	0.938 MHz → 1.67 MHz
Harmonic Number	2
Number of RF cavities	11
Number of Bending Magnet	24
Main Ring	
Circumference	1567.5 m
Injection Energy	3 GeV
Extraction Energy	30 GeV
Repetition Rate	~0.3 Hz
RF Frequency	1.67 MHz → 1.72 MHz
Harmonic Number	9
Number of RF cavities	6
Number of Bending Magnet	96

Key parameters of Materials and Life Science Experimental Facility

Injection energy	3 GeV
Repetition rate	25 Hz
Neutron source	
Target material	Mercury
Number of moderators	3
Moderator material	Supercritical hydrogen
Moderator temperature/pressure	20 K / 1.5 MPa
Number of neutron beam ports	23
Muon production target	
Target material	Graphite
Number of muon beam extraction ports	4
Neutron instruments*	
Open for user program (general use)	11
Under commissioning/construction	5/3
Muon instruments*	
Open for user program (general use)	2

(* as of March, 2012)

Events

Events

● The Media Briefing on the Damage of The Great East Japan Earthquake (April 28)

J-PARC Center held a media briefing on the damages from the earthquake on April 28. Fifteen news media companies and 23 people attended the meeting. They were shown the pictures of the disaster and guided to some of the scenes in J-PARC site.

Site tour in J-PARC by media

● Visitations of Diet Members

A number of Diet members visited J-PARC in May to inspect the damages from the earthquake.
House of Representatives member Hiroshi Kawauchi (the Democratic Party of Japan) and 5 Diet members visited J-PARC on May 5.
House of Representatives member Mamoru Takano (the Democratic Party of Japan) and 2 Diet members visited J-PARC on May 6.
House of Representatives member Hiroshi Kajiyama (the Liberal Democratic Party of Japan) visited J-PARC on May 13.

Hiroshi Kajiyama (right)

● MEXT Minister Takagi Visited J-PARC on June 23.

Yoshiaki Takagi, the Minister of Education, Culture, Sport, Science and Technology visited J-PARC on June 23. After he received a briefing of an overview of J-PARC by Shoji Nagamiya, the Director of J-PARC Center, he inspected the worst damaged areas in J-PARC site, the road in front of LINAC building and outside facilities around the 3-GeV synchrotron building.

Minister Takagi (middle)

● The Participants of Japan Physics Olympiad (JPhO) Visited J-PARC (August 2).

One hundred high school students who attended JPhO visited J-PARC. After a briefing of an overview of J-PARC by Shoji Nagamiya, the Director of J-PARC Center, they were shown the Materials and Life Science Experimental Facility. They enjoyed a dinner party very much with researchers over scientific topics and research experience.

Site tour in J-PARC

● The 4th ACFA-HPPA Mini-workshop (October 5-6)

The 4th International ACFA-HPPA Mini-workshop was held for two days from October 5th at the Ibaraki Quantum Beam Research Center (IQBRC) in Tokai Village. The workshop was hosted by J-PARC Center and experts in accelerator gathered from Japan, Korea and China. The main subjects were the beam commissioning of the J-PARC accelerator, the status and future plan of PEFP in Korea and the status of the CSNS project in China. Those presentations were followed by a number of questions and lively discussions. The next workshop was scheduled in two years in Korea.

● MEXT Minister Nakagawa Visited J-PARC on October 22.

Masaharu Nakagawa, the Minister of Education, Culture, Sport, Science and Technology visited J-PARC on October 22. He inspected the status of facilities and the recovery efforts from the damages of the earthquake.

Masaharu Nakagawa (Left)

● The 1st Asia-Oceania Conference on Neutron Scattering (1st AOCNS) (November 20-24)

The 1st AOCNS was held at the Tsukuba International Congress Center (EPOCHAL TSUKUBA) from November 20 to 24. The AOCNS was organized by the Japanese Society for Neutron Science (JSNS) and the Asia-Oceania Neutron Scattering Association (AONSA). About 550 researchers mainly from Asia and Oceania area joined the conference. One hundred ten oral presentations and more than 400 poster presentations were provided on the fruits of neutron scattering experiments. Around 150 participants visited the Materials and Life Science Experimental Facility and the Hadron Experimental Facility of J-PARC on November 24.

● The 3rd MLF Symposium (January19-20)

The 3rd MLF Symposium was held at the Ibaraki Quantum Beam Research Center (IQBRC) in Tokai Village from January 19 to 20 and about 160 participants attended. The symposium opened with the report on the disaster of MLF on March 11 and the recovery from the damages. The current topics in user programs and the progress of the experimental instruments were presented in the main sessions. At the end the users in overseas facilities talked about well-prepared laboratories to support users' experiments, which the MLF staff bore in mind as strong demands to MLF.

● TX Technology Showcase in TUKUBA 2012 (January 13)

The science exhibition was held on January 13 at the Tsukuba International Congress Center (EPOCHAL TSUKUBA), organized by Science Academy of Tsukuba at the Science and Technology Promotion Foundation of Ibaraki. The J-PARC booth was set up in the projects exhibition area and the outline of facility and scientific topics were introduced to visitors.

The J-PARC booth of the science exhibition

● The 1st International School for Strangeness Nuclear Physics (SNP School) 2012 (Feb. 12-18)

The 1st SNP School was held from February 12 to 18. It was co-hosted by Tohoku University and JAEA Advanced Science Research Center and supported by J-PARC and other institutes. Sixty three young researches and graduate students who had great ambition to study nuclear physics and particle physics attended from 17 nations. The researchers on the frontiers of this field delivered lectures and the participants reported their studies. The school was filled with fruitful discussions and exchanges of views. They visited the Materials and Life Science Experimental Facility, the Hadron Experimental Facility, the Neutrino Experimental Facility and the Central Control Room of J-PARC and keenly listened to the explanations from researchers at work.

Lecture at a conference room.

● The Celebration of the Resuming User Programs at Ibaraki Quantum Beam Research Center (IQBRC) (February 27)

The facility has been restored from the damages of the earthquake. The Materials and Life Science Experimental Facility and the Neutrino Experimental Facility resumed their operations for user programs on January 24. The J-PARC recovery project was completed on January 31 when the Hadron Experimental Facility were back in operation. In commemoration of the resumption after the earthquake, the ceremony was held at IQBRC on February 27. Daisuke Yoshida, the chief of Research Promotion Bureau of MEXT, Masaru Hashimoto, the governor of Ibaraki Prefecture, Tatsuya Murakami, the headman of Tokai Village, were invited as guests. Atsuyuki Suzuki, the president of JAEA, Atsuto Suzuki, the director general of KEK, Yasuhiko Fujii, the director of Comprehensive Research Organization for Science and Society (CROSS) in Tokai, the members of the J-PARC International Advisory Committee and J-PARC staff attended the ceremony.

Shoji Nagamiya, Director of J-PARC Center.

● The members of the Assessment Working Group Visited J-PARC (May 8)

The Assessment Working Group for High-Intensity Proton Accelerator Facility was set under the Council for Science and Technology at the Ministry of Education, Culture, Sport, Science and Technology (MEXT) and evaluated J-PARC in terms of its functions and contributions as a user facility. The chairperson of the working group, Hidetoshi Fukuyama (Vice President of Tokyo University of Science), and its members visited J-PARC and the status and operation were explained to them at each facility.

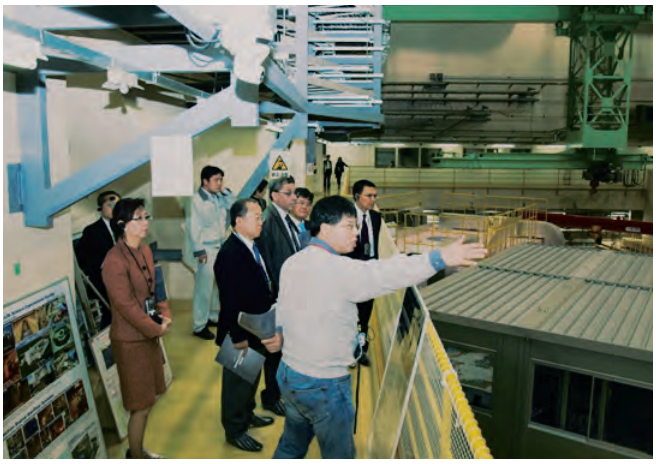
2nd from right: Hidetoshi Fukuyama (the chairman of the committee)

● Foreign Visitors (2011)

Many visitations from overseas countries

Andrew Taylor, the former Director of ISIS, on May 24.

Dr. Bill Brinkman, the Director of Office of Science at U.S. Department of Energy, on June 17.

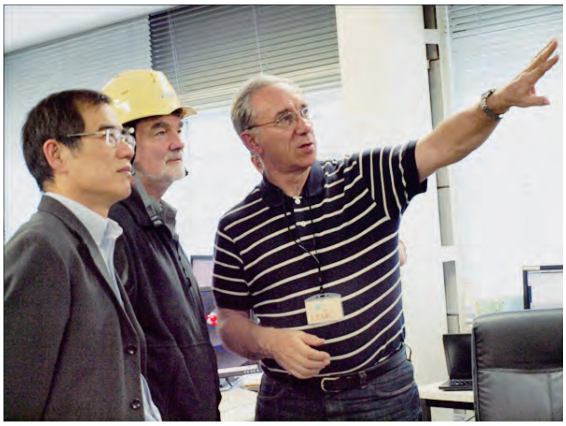


Ambassador of IAEA on October 12.

Officials of TRIUMF (TRI-University Meson Factory) on November 8.

Changming Zhang, the Vice President of China Atomic Scientific Research Institution, on April 9.

Kozlov Yuri, the Director of Fundamental Research at the Ministry of Education and Science of Russia, on April 13.

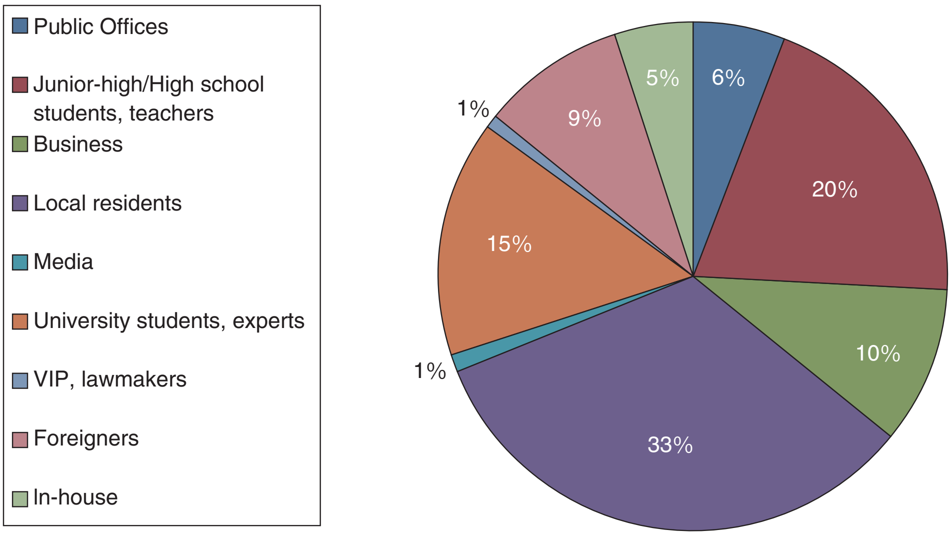


L.K. Len, the Program Manager of U.S. Department of Energy, on April 19.

Youngah Park, member of the National Assembly of the Republic of Korea, on May 8.

● Visitors to J-PARC in Japanese fiscal Year (JFY) 2011

In JFY2011, 2,725 people visited J-PARC.
The number of visitors dropped 60% compared to last year by effect of the earthquake on March, 11.



Breakdown of J-PARC visitors in JFY 2010.

Dates for Committees

1) Steering Committee

April 20th, 2010 at Ibaraki Quantum Beam Research Center, Tokai, Ibaraki
July 29th, 2010 at Tokai Campus, KEK
December 21st, 2010 at Tokai Campus, KEK

2) International Advisory Committee

February 21st and 22nd, 2011 at Ibaraki Quantum Beam Research Center, Tokai, Ibaraki

3) Users Consultative Committee for J-PARC

April 2nd, 2010 at Center for Computational Science & e-Systems, (Ueno), JAEA
October 6th, 2010 at Tokyo Office, JAEA
February 16th, 2011 at Tokyo Office, JAEA

4) Accelerator Technical Advisory Committee

February 17th - 19th, 2011 at Ibaraki Quantum Beam Research Center, Tokai, Ibaraki

5) Neutron International Advisory Committee

February 28th - March 2nd, 2011 at Ibaraki Quantum Beam Research Center, Tokai, Ibaraki

6) Muon Science Advisory Committee

February 18th and 19th, 2011 at Ibaraki Quantum Beam Research Center, Tokai, Ibaraki

7) Radiation Safety Committee

9th Committee : May 27th, 2010 at Nuclear Science Research Institute, JAEA, Tokai, Ibaraki
10th committee : December 7th, 2010 at Nuclear Science Research Institute, JAEA, Tokai, Ibaraki

8) MLF Advisory Borad

9th Board : August 12th, 2010 at Tokyo Office, JAEA
10th Board : March 11th, 2011 at Tokyo Office, JAEA

9) Nuclear and Particle Physics Experiments at the J-PARC 50 GeV Proton Synchrotron Program Advisory Committee

10th Committee : July 16th - 18th, 2010 at Tokai & Tsukuba campus, KEK
11th Committee : January 14th - 16th, 2011 at Tsukuba campus, KEK

Publications

Publications in Periodical Journals

A-001
Yui, T. et al.
Photoinduced Electron Transfer between the Anionic Porphyrins and Viologens in Titania Nanosheetsand Mono-disperse Mesoporous Silica Hybrid Films
ACS Appl. Mater. Interfaces, Vol 3, 931 (2011)

A-002
Tanaka, I. et al.
Neutron structure analysis using the IBARAKI biological crystal diffractometer (iBIX) at J-PARC
Acta Cryst. D, Vol 66, 1194 (2010)

A-003
Nakayama, K. et al.
Patternable Solution-Crystallized Organic Transistors with High Charge Carrier Mobility
Adv. Mater., Vol 23, 1575 (2011)

A-004
Uno, M. et al.
High-Speed Flexible Organic Field-Effect Transistors with a 3D Structure
Adv. Mater., Vol 23, 3047 (2011)

A-005
Soeda, J. et al.
Solution-Crystallized Organic Field-Effect Transistors with Charge-Transfer Layers: High-Mobility, Printable, Air-stable and Low-Threshold-Voltage Operation in Air
Adv. Mater., Vol 23, 3309 (2011)

A-006
Soeda, J. et al.
High Electron Mobility in Air for N,N′-1H,1H-Perfluorobutyldicyanoperylene Carboxydiimide Solution-Crystallized Thin-film Transistors on Hydrophobic Surfaces
Adv. Mater., Vol 23, 3681 (2011)

A-007
Matsui, M. et al.
The crystal structure of δ-Al(OH)3: Neutron diffraction measurements and ab initio calculations
Am. Mineral., Vol 96, 854 (2011)

A-008
Innis-Samson, V.-A. et al.
X-ray Reflection Tomography: A New Tool for Surface Imaging
Anal. Chem., Vol 83, 7600 (2011)

A-009
Nakamura, M. et al.
A Possibility of Dynamical Study on Solid State Ionic Materials by Inelastic Neutron Scattering
Atom Indonesia, Vol 36, 116 (2010)

A-010
Ninomiya, K. et al.
Development of nondestructive and quantitative elemental analysis method using calibration curve between muonic X-ray intensity and elemental composition in bronze
B. Chem. Soc. Jpn., Vol 85, 228 (2012)

A-011
Sano, K. et al
Thermoresponsive Microtubule Hydrogel with High Hierarchical Structure
Biomacromolecules, Vol 12, 1409 (2011)

A-012
Sano, K. et al
Self-Repairing Filamentous Actin Hydrogel with Hierarchical Structure
Biomacromolecules, Vol 12, 4173 (2011)

A-013
Masayasu, T. et al.
Current Status of a New Polarized Neutron Reflectometer at the Intense Pulsed Neutron Source of the Materials and Life Science Experimental Facility (MLF) of J-PARC
Chinese J. Phys., Vol 50, 161 (2012)

A-014
Kundu, S. et al.
Zwitterionic lipid (DPPC)-protein (BSA) complexes at the air-water interface
Colloid. Surface. B, Vol 93, 215 (2012)

A-015
Kimura, N. et al.
Development of a variable quench pressure relief valve for superconducting magnet system
Cryogenics, Vol 51, 465 (2011)

A-016
Tatsumoto, H. et al.
Design of a high power heater for the cryogenic hydrogen system at J-PARC
Cryogenics, Vol.51, 315 (2011)

A-017
Kawai, M. et al.
Measurements of strain-rate distributions on material after SHPB impact
Engineering Transaction, Vol 59, 1 (2011)

A-018
Yamada, N.L. et al.
Design and Performance of Horizontal Type Neutron Reflectometer SOFIA at J-PARC/ MLF
Euro. Phys. J. Plus, Vol.126 108 (2011).

A-019
Katayama, N. et al.
Conductivity and incommensurate antiferromagnetism of $Fe_{1.02}Se_{0.10}Te_{0.90}$ under pressure
Europhysics Letters, Vol 98, 37002 (2012)

A-020
Futakawa, M. et al.
Dynamic responses of a solid wall in contact with a bubbly liquid excited by thermal shock loading
Exp. Therm. Fluid Sci., Vol.35, 1177 (2011)

A-021
Shigematsu, H. et al.
Structures and Phase Transitions in Rb2MoO4 and Rb2WO4
Ferroelecrrics, Vol 414, 195 (2011)

A-022
Torikai, N. et al.
Structural analysis on a block copolymer thin film by in-situ neutron and X-ray grazing-incidence scattering techniques
Hamon, Vol 21, 091 (2011)

A-023
Kira, H.
Development of an on-beam SEOP polarized 3He neutron spin filter
Hamon, Vol 21, 146 (2011)

A-024
Ikeda, Y.
Development of J-PARC high intensity pulsed neutron source; Several critical decisions
Hamon, Vol 21, 152 (2011)

A-025
Shinohara, T. et al.
Magnetic Field Imaging by Polarized Neutrons
Hamon, Vol 21, 180 (2011)

A-026
Fujii, Y.
J-PARC Designated as the "Specific Advanced Neutron Beam Facility"
Hamon, Vol 21, 184 (2011)

A-027
Fujii, Y.
こんにちは、AONSA です
Hamon, Vol 21, 192 (2011)

A-028
Ito, S. e al.
Antiferromagnetic Fractons in Percolating Magnets
Hamon, Vol 21, 234 (2011)

A-029
Seto, H. et al.
Neutron Spin Echo Spectrometers at the Pulsed Neutron Source

Hamon, Vol 21, 239 (2011)

A-030
Tominaga, T. et al.
The 4th AONSA Neutron School 2011 Report
Hamon, Vol 22, 098 (2012)

A-031
Sano-Furukawa, A.
Neutron Diffraction Study on Hydrogen Bond in Mineral in the Deep Earth
Hamon, Vol 22, 162 (2012)

A-032
Arai, M.
Recovery from the Earthquake at MLF
Hamon, Vol 22, 216 (2012)

A-033
Nakamoto, T. et al.
Status of Superconducting Magnet System for the J-PARC Neutrino Beam Line
IEEE T. Appl. Supercon., Vol 21, 1700 (2011)

A-034
Makida, Y. et al.
Conceptual Design of a Superconducting Solenoid System for the Super Omega Muon Beam Line at J-PARC
IEEE T. Appl. Supercon., Vol 21, 1725 (2011)

A-035
Adachi, T. et al.
Quench Protection of Curved Solenoids for High Intensity Muon Beamlines
IEEE T. Appl. Supercon., Vol 21, 1734 (2011)

A-036
Sasaki, K. et al.
Study on Field Measurement and Ground Vibration for Superconducting Solenoid of New g-2 Experiment at J-PARC
IEEE T. Appl. Supercon., Vol 21, 1748 (2011)

A-037
Hemmi, T. et al.
Neutron Diffraction Measurements of Internal Strain in Nb3Sn Cable-In-Conduit Conductors
IEEE Trans. Appl. Supercond., Vol 21, 2028 (2011)

A-038
Osamura, K. et al.
Unusual Internal Strain Behavior Exerted on YBCO Layer in the Surround Cu Stabilized YBCO Coated Conductor
IEEE Trans. Appl. Supercond., Vol 21, 3090 (2011)

A-039
Morooka, S. et al.
In-situ Neutron Diffraction Study on Work-hardening Behavior in a Ferrite-Martensite Dual Phase Steel
Int. J. Automot. Eng., Vol 2, 361 (2011)

A-040
Naruki, M.
HADRON PHYSICS AT J-PARC - CURRENT STATUS AND FUTURE PROSPECTS
Int. J. Mod. Phys. A, Vol 26, 533 (2011)

A-041
Hiraiwa, T. et al.
THE SEARCH FOR DEEPLY BOUND KAONIC NUCLEAR STATES AT J-PARC
Int. J. Mod. Phys. A, Vol 26, 561 (2011)

A-042
Wuenschek, B.K. et al.
STATUS AND PLANS OF EXPERIMENT E17 AT J-PARC
Int. J. Mod. Phys. A, Vol 26, 604 (2011)

A-043
Su, Y. et al.
Hydrogen Behavior in an Ultrafine-Grained Electrodeposited Pure Iron
ISIJ Int., Vol 51, 1534 (2011)

A-044
Oba, Y. et al.
Quantitative Analysis of Precipitate in Vanadium-microalloyed Medium Carbon Steels Using Small-angle X-ray and Neutron Scattering Methods
ISIJ Int., Vol 51, 1852 (2011)

A-045
Oba, Y. et al.
Quantitative Analysis of Inclusions in Low Carbon Free Cutting Steel Using Small-angle X-ray and Neutron Scattering
ISIJ Int., Vol 52, 0457 (2012)

A-046
Iwase, H. et al.
Modernization of the small-angle neutron scattering spectrometer SANS-U by upgrade to a focusing SANS spectrometer
J Appl. Crystallogr., Vol 44, 558 (2011)

A-047
Iwase, H. et al.
Optimization of the thickness of a ZnS/6LiF scintillator for a high-resolution detector installed on a focusing small-angle neutron scattering spectrometer (SANS-U)
J Appl. Crystallogr., Vol 45, 507 (2012)

A-048
Nyuta, K. et al.
Zwitterionic heterogemini surfactants containing ammonium and carboxylate headgroups 2: Aggregation behavior studied by SANS, DLS, and cryo-TEM
J Colloid Interf. Sci., Vol 370, 80 (2012)

A-049
Okuda, T. et al.
Effect of spin dilution on the magnetic state of delafossite $CuCrO_2$ with an $S = 3/2$ antiferromagnetic triangular sublattice
J Korean. Phys. Soc., Vol 80, 014711 (2011)

A-050
Itoh, S. et al.
Antiferromagnetic Fractons in Diluted Heisenberg Systems $RbMn_{0.4}Mg_{0.6}F_3$ and $Rb_2Mn_{0.598}Mg_{0.402}F_4$
J Korean. Phys. Soc., Vol 80, 104704 (2011)

A-051
Nakajima, K. et al.
AMATERAS : A Cold-Neutron Disk Chopper Spectrometer
J Korean. Phys. Soc., Vol 80, SB028 (2011)

A-052
Itoh, S. et al.
Anomalous spin diffusion on two-dimensional percolating network in dilute antiferromagnet $Rb_2Mn_{0.6}Mg_{0.4}F_4$
J Korean. Phys. Soc., Vol 81, 74704 (2012)

A-053
Itoh, S. et al.
Quantum renormalization effects in one-dimensional Heisenberg antiferromagnets
J Korean. Phys. Soc., Vol 81, 84706 (2012)

A-054
Kasugai, Y. et al.
Shielding experiments under JASMIN Collaboration at Fermilab (I) Overview of the Research Activities
J Korean. Phys. Soc., Vol. 59, 2063 (2011)

A-055
Jina, X. et al.
Observation of A15 Phase Transformation in RHQ-Nb3Al Wire by Neutron Diffraction at High-temperature
J. Alloy. Compd., Vol 525, 124 (2012)

A-056
Shinamura, S. et al.
Linear- and Angular-Shaped Naphthodithiophenes; Selective Synthesis, Properties, and Application to Organic Field-Effect Transistors
J. Am. Chem. Soc., Vol 133, 5024 (2011)

A-057
Iwase, K. et al.
In situ lattice strain mapping during tensile loading using the neutron transmission and diffraction method
J. Appl. Cryst, Vol 45, 113 (2012)

A-058
Takahashi, K. et al.
Axial and lateral lattice strain states under a tensile load in as-reacted and prebent CuNb/Nb3Sn wires using neutron diffraction
J. Appl. Phys., Vol 111, 043908 (2012)

A-059
Takenaka, Y. et al.
Growth of gold nanorods in gelled

surfactant solutions
J. Coll. Int. Sci., Vol 356, 111 (2011)

A-060
Yamagishi, H. et al.
Simulation program for multiwire-type two-dimensional neutron detector with individual readout
J. Instrum., Vol 6, (2011)

A-061
Toh, K. et al.
Improved micro-pixel detector element for neutron measurement under high pressure
J. Instrum., Vol 7, (2012)

A-062
Kiyanagi, Y.
Accurate Neutron Nucleus Reaction Measurement Instrument(ANNRI) for Capture Cross Section Measurements at J-PARC
J. Korean Phys. Soc., Vol 59, 0779 (2011)

A-063
Bhang, H. et al.
The Weak Decay Widths of Λ Hypernuclei
J. Korean Phys. Soc., Vol 59, 1461 (2011)

A-064
Harada, H. et al.
Study of Neutron Capture Reactions Using the 4-pai Ge Spectrometer
J. Korean Phys. Soc., Vol 59, 1547 (2011)

A-065
Kin, T. et al.
The "4-pi Ge Spectrometer" for Measurements of Neutron Capture Cross Sections by the TOF Method at the J-PARC/MLF/ANNRI
J. Korean Phys. Soc., Vol 59, 1769 (2011)

A-066
Nakamura, S. et al.
Measurements of Neutron-capture Cross Sections of Palladium Isotopes at the J-PARC/MLF/ANNRI
J. Korean Phys. Soc., Vol 59, 1773 (2011)

A-067
Hori, J. et al.
Measurement of Neutron Capture Gamma Rays from the Resonances of 91Zr and 96Zr at the J-PARC/MLF/ANNRI
J. Korean Phys. Soc., Vol 59, 1777 (2011)

A-068
Kiyanagi, Y. et al.
The Study on Nuclear Data by Using a High Intensity Pulsed Neutron Source for Advanced Nuclear System' Nuclear Data Project and the Characteristics of the Neutron Beam Line for the Capture Cross Section Experiments at J-PARC
J. Korean Phys. Soc., Vol 59, 1781 (2011)

A-069
Kimura, A. et al.
Measurements of Neutron-capture Cross Sections of 244Cm and 246Cm at J-PARC/MLF/ANNRI
J. Korean Phys. Soc., Vol 59, 1828 (2011)

A-070
Takenaka, Y. et al.
Gelation Effect on the Synthesis of High-aspect-ratio Gold Nanorods
J. Nanosci. Nanotechnol., Vol 12, 714 (2012)

A-071
Naoe, T. et al.
Quantification of fatigue crack propagation of an austenitic stainless steel in mercury embrittlement
J. Nucl. Mater., Vol , (2011)

A-072
Naoe, T. et al.
Mitigation technologies for damage induced by pressure waves in high-power mercury spallation neutron sources, 3; Consideration of the effect of microbubbles on pressure wave propagation through a water test
J. Nucl. Sci. Technol., Vol 48, 865 (2011)

A-073
Ito, T.U. et al.
Incommensurate-to-Commensurate Magnetic Phase Transition in SmIn3 Observed by Muon Spin Relaxation
J. Phys. Soc. Jpn suppl., Vol 80, 033710 (2011)

A-074
Wakimoto, S. et al.
Degradation of Superconductivity and Spin Fluctuations by Electron Overdoping in LaFeAsO1-xFx
J. Phys. Soc. Jpn., Vol 79, 074715 (2010)

A-075
Miyazaki, M. et al.
Quasi-One-Dimensional Spin Dynamics in d-Electron Heavy-Fermion Metal $Y_{1-x}Sc_xMn_2$
J. Phys. Soc. Jpn., Vol 80, 063707 (2011)

A-076
Sato, M. et al.
Magnetic Excitation Spectra of Superconducting Ca–Fe–Pt–As System
J. Phys. Soc. Jpn., Vol 80, 093709 (2011)

A-077
Yamamoto, T. et al.
Intradimer Charge Disproportionation in Triclinic-EtMe3P[Pd(dmit)2]2 (dmit: 1,3-Dithiole-2-thione-4,5-dithiolate)
J. Phys. Soc. Jpn., Vol 80, 123709-1 (2011)

A-078
Ito, T.U. et al.
Possible Long-periodic Magnetic Structure in $SmPb_3$
J. Phys. Soc. Jpn., Vol 80, SA075 (2011)

A-079
Kino, K. et al.
Design of Air Scattering Chamber for the Powder Diffractometer SPICA
J. Phys. Soc. Jpn., Vol 80, SB01 (2011)

A-080
Fukuda, T. et al.
Phonon Spectra of $PrFeAsO_{1-y}$ via Inelastic X-ray Scattering
J. Phys. Soc. Jpn., Vol 80, SB015-1 (2011)

A-081
Tomiyasu, K. et al.
A spin molecule model for geometrically frustrated spinel $ZnFe_2O_4$
J. Phys. Soc. Jpn., Vol 80, SB024 (2011)

A-082
Kajimoto, R. et al.
The Fermi Chopper Spectrometer 4SEASONS at J-PARC
J. Phys. Soc. Jpn., Vol 80, SB025 (2011)

A-083
Takahashi, N. et al.
Repetition Rate Multiplication: RRM, an Advanced Measuring Method Planed for the Backscattering Instrument, DNA at the MLF, J-PARC
J. Phys. Soc. Jpn., Vol 80, SB07 (2011)

A-084
Torii, S. et al.
Super High Resolution Powder Diffractometer at J-PARC
J. Phys. Soc. Jpn., Vol 80, SB20 (2011)

A-085
Nakajima, K. et al.
AMATERAS: A Cold-Neutron Disk Chopper Spectrometer
J. Phys. Soc. Jpn., Vol 80, SB28 (2011)

A-086
Kawasaki, T. et al.
Structure of Morpholinium Tribromoplumbate C4H8ONH2PbBr3 Studied Using Single-Cry
stal Neutron Diffraction
J. Phys. Soc. Jpn., Vol 81, (2012)

A-087
Kadono, R. et al.
Quasi-One-Dimensional Spin Dynamics in LiV_2O_4: One-to-Three-Dimensional Crossover as a Possible Origin of Heavy Fermion State
J. Phys. Soc. Jpn., Vol 81, 014709 (2012)

A-088
Kawamoto, T. et al.
T_c of 11 K Identified for the Third Polymorph of the $(BEDT\text{-}TTF)_2Ag(CF_3)_4$(TCE) Organic Superconductor
J. Phys. Soc. Jpn., Vol 81, 023705-1 (2012)

A-089
Kiyanagi, R. et al.
Structural and Magnetic Phase Determination of (1-x)$BiFeO_3$-x$BaTiO_3$ Solid Solution
J. Phys. Soc. Jpn., Vol 81, 024603-1 (2012)

A-090
Mito, T. et al.
Mechanism of Field Induced Fermi Liquid State in Yb-Based Heavy-Fermion Compound: X-ray Absorption Spectroscopy and Nuclear Magnetic Resonance Studies of $YbCo_2Zn_{20}$
J. Phys. Soc. Jpn., Vol 81, 033706-1 (2012)

A-091
Kamada, K. et al.
Surfactant-induced friction reduction for hydrogels in the boundary lubrication regime
J. Phys.; Condens. Mat., Vol 23, 284107-1 (2011)

A-092
Mukai, K. et al.
Magnetic properties of the chemically delithiated $Li_xMn_2O_4$ with $0.07 \le x \le 1$
J. Solid State Chem., Vol 184, 1096 (2011)

A-093
Yokoyama, T. et al.
Hydrogen-bond network and pH sensitivity in transthyretin: Neutron crystal structure of human transthyretin.
J. Struct. Biol., Vol 177, 283 (2012)

A-094
Ogiwara, N., et al.
Improvement of sensitivity near atmospheric pressure in a Pirani gauge in constant current mode
J. Vac. Soc. Jpn., Vol 54, 162 (2011)

A-095
Ogiwara, N.
Simulation of radial flow generated by rotating a set of screens and disks, 2
J. Vac. Soc. Jpn., Vol 54, 188 (2011)

A-096
Kinsho, M.
Status of J-PARC after the Great East Japan Earthquake
J. Vac. Soc. Jpn., Vol 55, 1 (2012)

A-097
Takahashi, G. et al.
Development of a Neutral Beam Profile Monitor
Jpn. J. Appl. Phys., Vol 50, 36701 (2011)

A-098
Yamazaki, Y.
Report on LINAC'10
Kasokuki, Vol. 7, 304 (2011)

A-099
Ozeki, T. et al.
Status of J-PARC after the Great East Japan Earthquake
Kasokuki, Vol. 8, 74 (2011)

A-100
Seto, H.
Lipids, Lipid Bilayers and Vesicles as Seen by Neutrons
Kobunshi : high polymers, Jpn., Vol 60, 804 (2011)

A-101
Sumino, Y. et al.
Formation of a multi-scale aggregate structure through spontaneous blebbing of an interface
Langmuir, Vol 28, 2278 (2012)

A-102
Nakano, Y. et al.
Effect of Hyaluronan Solution on Dynamic Friction of PVA Gel Sliding on Weakly Adhesive Glass Substrate
Macromolecules, Vol 44, 8908 (2011)

A-103
Kawaguchi, D. et al.
Precise Analyses of Short-Time Relaxation at Asymmetric Polystyrene Interface in Terms of Molecular Weight by Time-Resolved Neutron Reflectivity Measurements
Macromolecules, Vol 44, 9424 (2011)

A-104
Ikeda, K. et al.
Data Acquisition System for High Resolution Chopper Spectrometer (HRC) at J-PARC
Mater. Trans., Vol 52, 598 (2011)

A-105
Zhou, Y. et al.
Enhanced Electrical Conductivities of Complex Hydrides $Li_2(BH_4)(NH_2)$ and $Li_4(BH_4)(NH_2)_3$ by Melting
Mater. Trans., Vol 52, 654 (2011)

A-106
Kamaya, N. et al.
A lithium superionic conductor
Nat. Mater., Vol 10, 682 (2011)

A-107
Foran, G. et al.
CROSS-Tokai Appointed to Run Public Beamline User Program at J-PARC
Neutron News, Vol 23, 33 (2012)

A-108
Futakawa, M. et al.
1-MW pulsed spallation neutron source (JSNS) at J-PARC
Neutron News, Vol. 22, 15 (2011)

A-109
Arai, M.
Pulsed Neutron Sources and Facilities
Neutrons in Soft Matter, edt T.Imae et al., John Wiley & Sons Publication

A-110
Otomo, T.
SANS Instruments at Pulsed Neutron Sources
Neutrons in Soft Matter, T. Imae, T. Kanaya, M. Furusaka, N. Torikai, (Eds.)

A-111
Mibe, T.
Measurement of muon g-2 and EDM with an ultra-cold muon beam at J-PARC
Nucl Phys. B, Vol 218, 242 (2011)

A-112
Kino, K. et al.
Measurement of energy spectra and spatial distributions of neutron beams provided by the ANNRI beamline for capture cross-section measurements at the J-PARC/MLF
Nucl. Instrum. Meth. A, Vol 626-627, 58 (2011)

A-113
Aoki, K. et al.
A development of HBD for the J-PARC E16 experiment
Nucl. Instrum. Meth. A, Vol 628, 300 (2011)

A-114
Itoh, S. et al.
High Resolution Chopper Spectrometer (HRC) at J-PARC
Nucl. Instrum. Meth. A, Vol 631, 90 (2011)

A-115
Nagano, M. et al.
Development of fabrication process for aspherical neutron focusing mirror using numerically controlled local wet etching with low-pressure polishing
Nucl. Instrum. Meth. A, Vol 634, 112 (2011)

A-116
Taketani, K. et al.
A high S/N ratio spin flip chopper system for a pulsed neutron source
Nucl. Instrum. Meth. A, Vol 634, S134 (2011)

A-117
Abgrall, N. et al.
Time projection chambers for the T2K near detectors
Nucl. Instrum. Meth. A, Vol 637, 25 (2011)

A-118
Tamura, F. et al.
Achievement of very low jitter extraction of high power proton beams in the J-PARC RCS
Nucl. Instrum. Meth. A, Vol 647, 25 (2011)

A-119
Iikura, H. et al.
Evaluations of the new LiF-scintillator and optional brightness enhancement films for neutron imaging

Nucl. Instrum. Meth. A, Vol 651, 100 (2011)

A-120
Shinohara, T. et al.
Quantitative magnetic field imaging by polarized pulsed neutrons at J-PARC
Nucl. Instrum. Meth. A, Vol 651, 121 (2011)

A-121
Kai, T. et al.
First demonstration of neutron resonance absorption imaging using a high-speed video camera in J-PARC
Nucl. Instrum. Meth. A, Vol 651, 126 (2011)

A-122
Kiyanagi, Y. et al.
Design study of the imaging beamline at J-PARC MLF, ERNIS
Nucl. Instrum. Meth. A, Vol 651, 16 (2011)

A-123
Yano, S. et al.
Data acquisition system for high resolution chopper spectrometer (HRC) at J-PARC
Nucl. Instrum. Meth. A, Vol 654, 421 (2011)

A-124
Itoh, S. et al.
Irradiation properties of T0 chopper components
Nucl. Instrum. Meth. A, Vol 654, 527 (2011)

A-125
Abe, K. et al.
The T2K experiment
Nucl. Instrum. Meth. A, Vol 659, 106 (2011)

A-126
Ooi, M. et al.
Experimental studies of the effect of the ortho/para ratio on the neutronic performance of a liquid hydrogen moderator for a pulsed neutron source
Nucl. Instrum. Meth. A, Vol 659, 61 (2011)

A-127
Itoh, S. et al.
Fermi chopper developed at KEK
Nucl. Instrum. Meth. A, Vol 661, 58 (2012)

A-128
Itoh, S. et al.
T0 chopper developed at KEK
Nucl. Instrum. Meth. A, Vol 661, 86 (2012)

A-129
Shiomi, K. et al.
Measurement of K0L source flux at the J-PARC neutral-kaon beam line L flux at the J-PARC neutral-kaon beam line
Nucl. Instrum. Meth. A, Vol 664, 264 (2012)

A-130
Kondo, Y. et al.
On-machine non-contact dimension-measurement system with laser displacement sensor for vane-tip machining of RFQs
Nucl. Instrum. Meth. A, Vol 667, 5 (2012)

A-131
Nomura, M. et al.
A convenient way to find an electrical insulation break of MA cores in J-PARC synchrotrons
Nucl. Instrum. Meth. A, Vol 668, 83 (2012)

A-132
Itoh, S. et al.
Large area window on vacuum chamber surface for neutron scattering instruments
Nucl. Instrum. Meth. A, Vol 670, 1 (2012)

A-133
Ohshita, H. et al.
Stability of neutron beam monitor for High Intensity Total Diffractometer at J-PARC
Nucl. Instrum. Meth. A, Vol 672, 75 (2011)

A-134
Ohoyama, K. et al.
Development of a non-adiabatic two-coil spin flipper for a polarised thermal neutron diffractometer with a 3He spin filter
Nucl. Instrum. Meth. A, Vol 680, 75 (2012)

A-135
Sato, S.
J-PARC Facilities and Physics
Nucl. Instrum. Meth. A, Vol 862, 238 (2011)

A-136
Lim, G.Y.
Kaon experiments at J-PARC
Nucl. Phys. B, Vol 210, 210 (2011)

A-137
Kobayashi, T.
Future Neutrino Physics Scenarios in Japan
Nucl. Phys. B, Vol 217, 205 (2011)

A-138
Kurup, A.
The COherent Muon to Electron Transition (COMET) experiment
Nucl. Phys. B, Vol 218, 38 (2011)

A-139
Nakadaira, T. et al.
T2K and beyond
Nucl. Phys. B, Vol 221, 206 (2011)

A-140
Iizuka, R. et al.
Pressure responses of portlandite and H-D isotope effects on pressure-induced phase transitions
Phys. Chem. Miner., Vol 38, 777 (2011)

A-141
Sano-Furukawa, A. et al.
Compression behaviors of distorted rutile-type hydrous phases, MOOH (M=Ga, In, Cr) and CrOOD
Phys. Chem. Miner., Vol 39, 375 (2012)

A-142
Sano-Furukawa, A. et al.
Investigation of hydrogen sites of wadsleyite: A neutron diffraction study
Phys. Earth Planet. In., Vol 189, 56 (2011)

A-143
Kamazawa, K. et al.
Interrelationship between Li+ diffusion, charge, and magnetism in $^{7}LiMn_2O_4$ and $^{7}Li_{1.1}Mn_{1.9}O_4$ spinels: Elastic, inelastic, and quasielastic neutron scattering
Phys. Rev. B, Vol 83, 094401 (2011)

A-144
Shu, L. et al.
Suppression of time-reversal symmetry breaking superconductivity in $Pr(Os_{1-x}Ru_x)_4Sb_{12}$ and $Pr_{1-y}LayOs_4Sb_{12}$
Phys. Rev. B, Vol 83, 100504 (2011)

A-145
Tanabe, Y. et al.
Similarity between Ni and Zn Impurity Effects on the Superconductivity and Cu-Spin Correlation in $La_{2-x}Sr_xCu_{1-y}Ni_yO_4$ High-T_c Cuprates: A Comparison Based on the Hole Trapping by Ni
Phys. Rev. B, Vol 83, 144521 (2011)

A-146
Okabe, H. et al.
Ba_2IrO_4: A spin-orbit Mott insulating quasi-two-dimensional antiferromagnet
Phys. Rev. B, Vol 83, 155118 (2011)

A-147
Adachi, T. et al.
Development of Cu-Spin Correlation in the $Bi_{1.74}Pb_{0.38}Sr_{1.88}Cu_{1-y}ZnyO_{6+\delta}$ High-Temperature Superconductors Observed by Muon Spin Relaxation
Phys. Rev. B, Vol 83, 184522 (2011)

A-148
Ishii, K. et al.
Polarization-analyzed resonant inelastic x-ray scattering of the orbital excitations in $KCuF_3$
Phys. Rev. B, Vol 83, 241101 (2011)

A-149
Nishi, I. et al.
Angle-resolved photoemission spectroscopy study of $PrFeAsO_{0.7}$: Comparison with LaFePO
Phys. Rev. B, Vol 84, 014504 (2011)

A-150
Matsubayashi, K. et al.
Pressure-induced changes in the magnetic and valence state of $EuFe_2As_2$
Phys. Rev. B, Vol 84, 024502-1 (2011)

A-151
Ofer, O. et al.
Frustration and magnetism of the zigzag chain compounds EuL2O4 (L = Yb, Lu, Gd, Eu)
Phys. Rev. B, Vol 84, 054428 (2011)

A-152
Sugiyama, J. et al.
Magnetic and diffusive nature of $LiFePO_4$ investigated by muon spin rotation and relaxation
Phys. Rev. B, Vol 84, 054430 (2011)

A-153
Iida, K. et al.
Inelastic neutron scattering study of the magnetic fluctuations in Sr_2RuO_4
Phys. Rev. B, Vol 84, 060402 (2011)

A-154
Fukuda, T. et al.
Soft and Isotropic Phonons in $PrFeAsO_{1-y}$
Phys. Rev. B, Vol 84, 064504 (2011)

A-155
Kobayashi, W. et al.
Anisotropic thermoelectric properties associated with dimensional crossover in quasi-one-dimensional $SrNbO_{3.4+d}$ (d-0.03)
Phys. Rev. B, Vol 84, 085118-1 (2011)

A-156
Gretarsson, H. et al.
Revealing the dual nature of magnetism in iron pnictides and iron chalcogenides using x-ray emission spectroscopy
Phys. Rev. B, Vol 84, 100509 (R) (2011)

A-157
Fukuta, R et al.
Effect of cation-size variation on spin and orbital orders in $Eu_{1-x}(La_{0.254}Y_{0.746})_xVO_3$
Phys. Rev. B, Vol 84, 140409 (2011)

A-158
Ishikado, M. et al.
$s^{\pm}$-like spin resonance in the iron-based nodal superconductor $BaFe_2(As_{0.65}P_{0.35})_2$ observed using inelastic neutron scattering
Phys. Rev. B, Vol 84, 144517 (2011)

A-159
Sugiyama, J. et al.
Successive magnetic transitions and static magnetic order in RCoAsO (R=La, Ce, Pr, Nd, Sm, Gd) confirmed by muon-spin rotation and relaxation
Phys. Rev. B, Vol 84, 184421 (2011)

A-160
Murai, N. et al.
Effect of out-of-plane disorder on superconducting gap anisotropy in $Bi_{2+x}Sr_{2-x}CaCu_2O_{8+\delta}$ as seen via Raman spectroscopy
Phys. Rev. B, Vol 85, 020507 (R) (2012)

A-161
Sugiyama, J. et al.
Diffusive behavior in LiMPO4 with M=Fe, Co, Ni probed by muon-spin relaxation
Phys. Rev. B, Vol 85, 054111 (2012)

A-162
Hirata, Y. et al.
Correlation between the interlayer Josephson coupling strength and an enhanced superconducting transition temperature of multilayer cuprate superconductors
Phys. Rev. B, Vol 85, 054501 (2012)

A-163
Nambu, Y. et al.
Block magnetism coupled with local distortion in the iron-based spin-ladder compound $BaFe_2Se_3$
Phys. Rev. B, Vol 85, 064413-1 (2012)

A-164
Ishii, K. et al.
Electronic excitations around the substituted atom in La2Cu1-yNiyO4 as seen via resonant inelastic x-ray scattering
Phys. Rev. B, Vol 85, 104509 (2011)

A-165
Ohwada, K. et al.
Two-dimensional charge fluctuation in b-$Na_{0.33}V_2O_5$
Phys. Rev. B, Vol 85, 134102-1 (2012)

A-166
Dissanayake, S.E. et al.
Magnetic-field-induced instability of the cooperative paramagnetic state in ZnxCo4–x(OD)6Cl2
Phys. Rev. B, Vol 85, 174435 (2012)

A-167
Matsumiya, H. et al.
Level structure and production cross section of 12Ξ Be studied with coupled-channels antisymmetrized molecular dynamics
Phys. Rev. C, Vol 83, 24312 (2011)

A-168
Isaka, M. et al.
Deformation of hypernuclei studied with antisymmetrized molecular dynamics
Phys. Rev. C, Vol 83, 44323 (2011)

A-169
Isaka, M. et al.
Shell and cluster states of 21ΛNe studied with antisymmetrized molecular dynamics
Phys. Rev. C, Vol 83, 54304 (2011)

A-170
Abe, K. et al.
First muon-neutrino disappearance study with an off-axis beam
Phys. Rev. D, Vol 85, 31103 (2012)

A-171
Inoue, R. et al.
Interfacial properties of polystyrene thin films as revealed by neutron reflectivity
Phys. Rev. E, Vol 84, 031802 (2011)

A-172
Toriyama, T. et al.
Peierls Mechanism of the Metal-Insulator Transition in Ferromagnetic Hollandite $K_2Cr_8O_{16}$
Phys. Rev. Lett., Vol 107, 266402-1 (2011)

A-173
Abe, K. et al.
Indication of Electron Neutrino Appearance from an Accelerator-Produced Off-Axis Muon Neutrino Beam
Phys. Rev. Lett., Vol 107, 41801 (2011)

A-174
Jeong, J. et al.
Spin wave measurements over full Brillouin zone of multiferroic $BiFeO_3$
Phys. Rev. Lett., Vol 108, 077202 (2012)

A-175
Machida, A. et al.
Formation of NaCl-Type Monodeuteride LaD by the Disproponationation Reaction of LaD_3
Phys. Rev. Lett., Vol 108, 205501 (2012)

A-176
Tamura, F. et al.
Multiharmonic rf feedforward system for beam loading compensation in wide-band cavities of a rapid cycling synchrotron
Phys. Rev. ST Accel. Beams, Vol 14, 051004 (2012)

A-177
Ao, H. et al.
First high-power model of the annular-ring coupled structure for use in the Japan Proton Accelerator Research Complex linac
Phys. Rev. ST Accel. Beams, Vol 15, 011001 (2012)

A-178
Ino, T. et al.
Measurement of the neutron beam polarization of BL05/NOP beamline at J-PARC
Physica B, Vol 406, 2424 (2011)

A-179
Kira, H. et al.
Development and test of SEOP neutron spin filter in Japan
Physica B, Vol 406, 2433 (2011)

A-180
Arimoto, Y. et al.
External cavity design of high-power diode laser for polarized helium-3 neutron spin filters based on spin-exchange optical

pumping
Physica B, Vol 406, 2439 (2011)

A-181
Sakaguchi, Y. et al.
Research on glass cells for 3He neutron spin filters
Physica B, Vol 406, 2443 (2011)

A-182
Shamoto, S. et al.
Neutron scattering of iron-based superconductors
Physica C, Vol 471, 639 (2011)

A-183
Ishikado, M. et al.
Inelastic neutron scattering on iron-based superconductor $BaFe_2(As,P)_2$
Physica C, Vol 471, 643 (2011)

A-184
Kanaya, T. et al.
Structure and dynamics of poly(vinyl alcohol) gels in mixtures of dimethyl sulfoxide and water
Polymer J., Vol 44, 83 (2012)

A-185
Kasugai, Y. et al.
Gamma dose measurements and spectroscopy analysis for spallation products in JSNS mercury circulation system
Prog. Nucl. Sci. Tech., Vol. 1, 501 (2011) (Fifth Int. Symp. on Radiation Safety and Detection Technology, ISORD-5)

A-186
Morii, Y. et al.
Finishing a Series of Lectures on Neutron Diffraction
RADIOISOTOPES, Vol 60, 151 (2011)

A-187
Suzuya, K.
Structure analysis of liquids and disordered materials using pulsed neutron diffraction and total scatteirng
RADIOISOTOPES, Vol 60, 63 (2011)

A-188
Tanaka, I. et al.
Fundamentals and applications of neutron diffraction (applications 28) Structural study of hydrogen and hydration by the Ibaraki Biological Crystal Diffractometer (iBIX)/ industrial use
RADIOISOTOPES, Vol 60, 89 (2011)

A-189
Yokoo, T. et al.
Examination of gas desorption by B4C resin for use in neutron scattering experiment
Rev. Sci. Instrum, Vol 82, 95109 (2011)

A-190
Nakatani, K. et al.
Collaboration between J-PARC and Computing Science
RIST NEWS, Vol 49, 20 (2010)

A-191
Sumino, Y. et al.
Dynamical blebbing at a droplet interface driven by instability in elastic stress: a novel self-motile system
Soft Matter, Vol 7, 3204 (2011)

A-192
Liu, H.J. et al.
Surface and interface porosity of polymer/ fullerene-derivative thin films revealed by contrast variation of neutron and X-ray reflectivity
Soft Matter, Vol 7, 9276 (2011)

A-193
Sato, M. et al.
On the superconducting pairing mechanism of Fe-based systems -Is it new or well-known?-
Solid State Commun. Special Issue on Iron pnictides, Vol 152, 688 (2012)

A-194
Jin, X. et al.
Residual strain dependence on the matrix structure in RHQ-Nb3Al wires by neutron diffraction measurement
Supercond. Sci. Tech., Vol 25, 065021 (2012)

A-195
Matuo, H. et al.
Ferroelectric Properties and Domain Structures of (Bi0.5K0.5)TiO3-BiFeO3 ceramics
T. MRS Jap., Vol 36, 285 (2011)

A-196
Fujii, Y.
［西川賞］受賞論文：中性子・放射光による構造物性研究、および結晶学の発展への貢献
日本結晶学会誌

A-197
Fujii, Y.
中性子利用の新時代
表面科学

A-198
Otomo, T.
高エネルギー加速器研究機構と中性子全散乱装置
触媒技術の動向と展望 2011

Conference Reports and Books

C-001
Hirai, M. et al.
Recent progress on nuclear parton distribution functions
AIP Conf. Proc., Vol 1369, 88 (2011)

C-002
Miyake, Y. et al.
Strongest Pulsed Muon Source at J-PARC MUSE
AIP Conf. Proc., Vol 1382, 217 (2011)

C-003
Ikedo, Y. et al.
The Status of the Superomega Muon Beamline
AIP Conf. Proc., Vol 1382, 220 (2011)

C-004
Naruki, M.
Status Report of J-PARC E19
AIP Conf. Proc., Vol 1388, 412 (2011)

C-005
Dote, A. et al.
Application of coupled-channel Complex Scaling Method to Λ(1405)
AIP Conf. Proc., Vol 1388, 589 (2011)

C-006
Ishida, K. et al.
Low emittance, slow muon source for new g-2 experiment
AIP Conf. Proc., Vol. 1382, 223 (2011)

C-007
Shimomura, K.
Possibility of precise measurements of muonium HFS at J-PARC MUSE
AIP Conf. Proc., Vol. 1382, 245 (2011)

C-008
Kobayashi, T. et al.
Features of the J-PARC linac
AIP Conf. Proc., Vol.1336, 029 (2011)

C-009
Sato, S.
J-PARC Status, Nuclear and Particle Physics
AIP Conf. Proc., Vol.1336, 560 (2011)

C-010
Imai, K.
J-PARC and its prospects of nuclear and particle physics
AIP Conf. Proc., Vol.1342, 032 (2011)

C-011
Hayano, R.S.
Kaonic Atoms
AIP Conf. Proc., Vol.1374, 208 (2011)

C-012
Sato, M. et al.
Precision spectroscopy of kaonic ^{3}He X-rays at J-PARC
AIP Conf. Proc., Vol.1374, 216 (2011)

C-013
Paolone, V. et al.
T2K: ND280 Status, Progress, and Plans
AIP Conf. Proc., Vol.1382, 182 (2011)

C-014
Takahashi, T.
J-PARC, facility for hadron physics, the present status and future
AIP Conf. Proc., Vol.1388, 166 (2011)

C-015
Naruki, N. et al.
Status Report of J-PARC E19
AIP Conf. Proc., Vol.1388, 412 (2011)

C-016
Hashimoto, T. et al.
Precision Spectroscopy of Kaonic Helium-3 X-rays at J-PARC
AIP Conf. Proc., Vol.1388, 580 (2011)

C-017
Enomoto, S. et al.
Spectroscopic study of Λ(1405) via the in-flight (K−,n) reaction on deuteron
AIP Conf. Proc., Vol.1388, 599 (2011)

C-018
Sugimura, H. et al.
Development of Silicon Strip Detector for the measurement of the Ξ-atom X-rays
AIP Conf. Proc., Vol.1388, 602 (2011)

C-019
Oguri, H. et al.
Operation status of the J-PARC negative hydrogen ion source
AIP Conf. Proc., Vol.1390, 235 (2011)

C-020
Ueno, A. et al.
Impedance measurement of an antenna with hydrogen plasma driven by 13.56 MHz-rf for J-PARC H^{-} ion source
AIP Conf. Proc., Vol.1390, 292 (2011)

C-021
Sada, Y. et al.
A Search for deeply-bound Kaonic nuclear state at the J-PARC E15 experiment
AIP Conf. Proc., Vol.1390, 583 (2011)

C-022
Mizusawa, M. et al.
In-situ X-ray reflectivity measurement of polyvinyl acetate thin films during glass transition
IOP Conf. Ser.: Mater. Sci. Eng., Vol 24, 012013 (2011)

C-023
Torikai, N. et al.
Development of a Physically Bent Cylindroid Mirror for Beam Focusing for a Pulsed Neutron Reflectometer
IOP Conf. Ser.: Mater. Sci. Eng., Vol 24, 012016 (2011)

C-024
Terayama, Y. et al.
Chain dimensions in free and immobilized brush states of polysulfobetaine in aqueous solution at various salt concentrations
J. Phys.; Conf. ser., Vol 272, 012010 (2011)

C-025
Mitamura, K. et al.
Advanced Neutron Reflectometer for Investigation on Dynamic/Static Structures of Soft-Interfaces in J-PARC
J. Phys.; Conf. ser., Vol 272, 012017 (2011)

C-026
Kobayashi, M. et al.
Characterization of Swollen States of Polyelectrolyte Brushes in Salt Solution by Neutron Reflectivity
J. Phys.; Conf. ser., Vol 272, 012019 (2011)

C-027
Torikai, N. et al.
Depth distribution of different solvents in a phase-separated block copolymer thin film
J. Phys.; Conf. ser., Vol 272, 012027 (2011)

C-028
Sakaguchi, Y. et al.
Structure of glasses for ^{3}He neutron spin filter cells
J. Phys.; Conf. ser., Vol 294, 012004 (2011)

C-029
Kira, H. et al.
Developments of In-Situ SEOP Polarized ^{3}He Neutron Spin Filter in Japan
J. Phys.; Conf. ser., Vol 294, 012014 (2011)

C-030
Sakaguchi, Y. et al.
Applications of ^{3}He neutron spin filters on the small-angle neutron scattering spectrometer SANS-J-II
J. Phys.; Conf. ser., Vol 294, 012017 (2011)

C-031
Miyake, Y. et al.
Ultra Slow Muon Microscopy for Nano-science
J. Phys.; Conf. Ser., Vol 302, 012038 (2011)

C-032
Oka, M. et al.
Prospects of the Hadron Physics at J-PARC
J. Phys.; Conf. Ser., Vol 302, 12052 (2011)

C-033
Hasegawa, T. et al.
Introductory remark on the First International Workshop towards the Giant Liquid Argon Charge Imaging Experiment (GLA2010)
J. Phys.; Conf. Ser., Vol 308, 12001 (2011)

C-034
Maruyama, T. et al.
A tagged low-momentum kaon test-beam exposure with a 250L LAr TPC (J-PARC T32)
J. Phys.; Conf. Ser., Vol 308, 12008 (2011)

C-035
Sakuma, F. et al.
Development of Thick-GEMs for a GEM-TPC Tracker
J. Phys.; Conf. Ser., Vol 308, 12018 (2011)

C-036
Yoshioka, M. et al.
Okinoshima site study
J. Phys.; Conf. Ser., Vol 308, 12028 (2011)

C-037
Mozzucato, E. et al.
The T2K Time Projection Chambers: first year of operation
J. Phys.; Conf. Ser., Vol 309, 12019 (2011)

C-038
Nagae, T.
Strangeness in Nuclear Physics
J. Phys.; Conf. Ser., Vol 312, 022001 (2011)

C-039
Hayano, R.S.
Kaonic Helium X-rays
J. Phys.; Conf. Ser., Vol 312, 022004 (2011)

C-040
Bhang, H. et al.
The three-body nonmesonic weak decay process of 12ΛC hypernucleus and its exclusive measurement at J-PARC (E18)
J. Phys.; Conf. Ser., Vol 312, 022009 (2011)

C-041
Sato, M. et al.
Precision Spectroscopy of Kaonic Helium-3 X-rays at J-PARC
J. Phys.; Conf. Ser., Vol 312, 022020 (2011)

C-042
Kumano, S.
Plans for Hadronic Structure Studies at J-PARC
J. Phys.; Conf. Ser., Vol 312, 032005 (2011)

C-043
Nagamiya, S.
Overview of hadron facilities.
J. Phys.; Conf. Ser., Vol 312, 052002 (2011)

C-044
Hashimoto, T. et al.
Performance Evaluation of Silicon Drift Detectors for a Precision X-ray Spectroscopy of Kaonic Helium-3
J. Phys.; Conf. Ser., Vol 312, 052009 (2011)

C-045
Kou, H.
Beam Commissioning of K1.8BR Beamline at J-PARC Hadron Hall
J. Phys.; Conf. Ser., Vol 312, 052012 (2011)

C-046
Shirotori, K. et al.
The first experiment at the J-PARC K1.8 beam line using the SKS spectrometer
J. Phys.; Conf. Ser., Vol 312, 052013 (2011)

C-047
Takahashi, T. et al.
Commissioning of the J-PARC K1.8 beamline and the beam spectrometer
J. Phys.; Conf. Ser., Vol 312, 052026 (2011)

C-048
Takahashi, H. et al.
Construction and beam commissioning of Hadron Experimental Hall at J-PARC
J. Phys.; Conf. Ser., Vol 312, 052027 (2011)

C-049
Ohira-Kawamura, S. et al.
ToF Inelastic neutron scattering studies on quantum spin systems (CuCl)LaB2O7 (B = Nb, Ta)
J. Phys.; Conf. Ser., Vol 320, 012037 (2011)

C-050
Nakayoshi, K. et al.
DAQ-Middleware: Progress and status
J. Phys.; Conf. Ser., Vol 331, 022023 (2011)

C-051
Sendai, H. et al.
Performance measurement of DAQ-Middleware
J. Phys.; Conf. Ser., Vol 331, 022039 (2011)

C-052
Ino, T. et al.
A compact SEOP 3He neutron spin filter with AFP NMR
J. Phys.; Conf. Ser., Vol 340, 012006 (2012)

C-053
Sakai, K. et al.
Development of polarized Xe gas target for neutron experiment at J-PARC
J. Phys.; Conf. Ser., Vol 340, 012037 (2012)

C-054
Tamura, I. et al.
Current status of a time-of-flight single crystal neutron diffractometer SENJU at J-PARC
J. Phys.; Conf. Ser., Vol 340, 012040 (2012)

C-055
Onodera, Y. et al.
Reverse Monte Carlo modeling of Li2S-P2S5 superionic conductors
J. Phys.; Conf. Ser., Vol 340, 012058 (2011)

C-056
Shamoto, S. et al.
Dynamical Spin Susceptibility Studied by Inelastic Neutron Scattering on $LaFeAsO_{1-x}F_x$
J. Phys.; Conf. Ser., Vol 340, 012075/6 (2012)

C-057
Shimakura, H. et al.
Quasi-elastic neutron scattering of dense molecular liquid selenium bromide
J. Phys.; Conf. Ser., Vol 340, 012080 (2012)

C-058
Chow, K.H. et al.
µSR Investigation of the Hollandite Vanadate $K_2V_8O_{16}$
Physics Procedia, Vol , (2011)

C-059
Mihara, S.
Muon physics programs at J-PARC
Physics Procedia, Vol 17, 153 (2011)

C-060
Arimoto, Y. et al.
Longitudinal-gradient magnet for time focusing of ultra-cold neutrons
Physics Procedia, Vol 17, 20 (2011)

C-061
Sugiyama, J. et al.
Lithium Diffusion in Lithium-Transition-Metal Oxides Detected by µ+SR
Physics Procedia, Vol 30, 105 (2012)

C-062
Adiperdana, B. et al.
Muon Sites Estimation in La2CuO4 and A New Vanadium Cluster Compound, $V_4S_9Br_4$, using Electronic and Nuclear Dipole Field Calculations
Physics Procedia, Vol 30, 109 (2012)

C-063
Sugiyama, J. et al.
Magnetic and Diffusive Nature of LiFePO4
Physics Procedia, Vol 30, 190 (2012)

C-064
Magnus Wikberg, J. et al.
Magnetic Order and Frustrated Dynamics in Li (Ni0.8Co0.1Mn0.1)O2: A Study by µ+SR and SQUID Magnetometry
Physics Procedia, Vol 30, 202 (2012)

C-065
Shimomura, K. et al.
Photo Detachment of Negatively Charged Muonium in GaAs by Laser Irradiation
Physics Procedia, Vol 30, 224 (2012)

C-066
Yokoyama, K. et al.

Detection of Conduction Electron Spin Polarization in n-GaAs by Negative Muonium
Physics Procedia, Vol 30, 231 (2012)

C-067
Sugiyama, J. et al.
Successive Magnetic Transitions in RECoAsO
Physics Procedia, Vol 30, 262 (2012)

C-068
Miura, A. et al.
Beam Diagnostics in the J-PARC Linac for ACS Upgrade
Proc. of 10th European Workshop on Beam Diagnostics and Instrumentation for Particle Accelerators (DIPAC2011), 050 (2011)

C-069
Tejima, M. et al.
Beam Based Gain Calibration of Beam Position Monitors at J-PARC MR
Proc. of 10th European Workshop on Beam Diagnostics and Instrumentation for Particle Accelerators (DIPAC2011), 092 (2011)

C-070
Miura, A. et al.
Beam Loss Detected by Scintillation Monitor
Proc. of 10th European Workshop on Beam Diagnostics and Instrumentation for Particle Accelerators (DIPAC2011), 149 (2011)

C-071
Toyama, T.
Beam Instrumentation in J-PARC
Proc. of 10th European Workshop on Beam Diagnostics and Instrumentation for Particle Accelerators (DIPAC2011), 275 (2011)

C-072
Miyao, T. et al.
Beam Position Monitors for the ACS Section of the J-PARC Linac
Proc. of 10th European Workshop on Beam Diagnostics and Instrumentation for Particle Accelerators (DIPAC2011), 341 (2011)

C-073
Kurimoto, Y. et al.
The Bunch by Bunch Feedback System in J-PARC Main Ring
Proc. of 10th European Workshop on Beam Diagnostics and Instrumentation for Particle Accelerators (DIPAC2011), 482 (2011)

C-074
Xu, P.G. et al.
Development and Prospect of Bulk Texture Measurement Technique by Neutron Diffraction
Proc. of 120th Spring Conf. of the Japan Inst. of Light Metals, 289 (2011)

C-075
Obayashi, H. et al.
Design study for beam window of ADS and development of LBE flow measurement techniques
Proc. of 19th Int. Conf. on Nuclear Engineering (ICONE-19) (CD-ROM), (2011)

C-076
Takei, H. et al.
Study on the structural integrity of fuel claddings against beam trips for accelerator-driven system
Proc. of 19th Int. Conf. on Nuclear Engineering (ICONE-19) (CD-ROM), (2011)

C-077
Takei, H. et al.
Estimation of acceptable beam trip frequencies of accelerators for ADS and comparison with performances of existing accelerators
Proc. of 1st Int. Workshop on Technology and Components of Accelerator-driven Systems (TCADS-1), 231 (2011)

C-078
Hotchi, H. et al.
J-PARC BEAM COMMISSIONING PROGRESS
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 0006, (2011)

C-079
Ikegami, M.
Study on the Realignment Plan for J-PARC Linac after the Tohoku Earthquake in Japan
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 0044, (2011)

C-080
Morita, Y. et al.
Development of a New RF Accelerating Cavity for J-PARC Ring Accelerator
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 0098, (2011)

C-081
Nomura, M. et al.
Condition of MA Cut Cores in the RF Cavities of J-PARC Main Ring after Several Years of Operation
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 0107, (2011)

C-082
Shobuda, Y. et al.
Mitigation of Beam Instability due to Space Charge Effects at 3 GeV RCS in J-PARC
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 0595, (2011)

C-083
Sato, Y. et al.
Beam Dynamics Simulations of J-PARC Main Ring for Upgrade Plan of Fast Extraction Operation
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 0598, (2011)

C-084
Yamamoto, M. et al.
Simulation of Longitudinal Emittance Control in J-PARC RCS for 400 MeV Injection
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 0607, (2011)

C-085
Ogiwara, N.
Ultra High Vacuum for High Intensity Proton Accelerators
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 0971, (2011)

C-086
Igarashi, S. et al.
Beam Profile Measurement using Flying Wire Monitors at the J-PARC Main Ring*
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 1239, (2011)

C-087
Yoshimura, K. et al.
New Measurements of Proton Beam Extinction at J-PARC
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 1242, (2011)

C-088
Maruta, T.
Longitudinal Beam Profile Measurement at J-PARC Separated Drift Tube Linac
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 1245, (2011)

C-089
Sato, H. et al.
Measurement of Beam Loss Tracks by Scintillating Fibers at J-PARC Linac
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 1251, (2011)

C-090
Hatakeyama, S.
Monitoring of the Betatron Tune and Amplitude at Multi-batch Injection of J-PARC MR
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 1254, (2011)

C-091
Miura, A. et al.
Beam Loss Detected by Scintillation Monitor*Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 1257, (2011)*

C-092
Yoshimoto, M.
Development of the H0 Dump Branch Duct for the Additional Collimation System in J-PARC RCS
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 1545, (2011)

C-093
Yamamoto, K. et al.
Foil Scattering Loss Mitigation by the Additional Collimation System of J-PARC RCS*Proc. of 2nd Int. Conf. Particle Accelerator*

Conf. (IPAC2011), 1605, (2011)

C-094
Agari, A. et al.
Development and Construction of the Beam Dump for J-PARC Hadron Hall
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 1608, (2011)

C-095
Shirakata, M.J. et al.
Displacement of J-PARC Caused by Megaquake
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 1662, (2011)

C-096
Miura, A. et al.
Beam Monitor Deformation by Tohoku Earthquake and its Recovery Project
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2328, (2011)

C-097
Yoshimoto, M. et al.
Suppression of Leakage Fields from DC Magnets in J-PARC 3 GeV RCS
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2412, (2011)

C-098
Koseki, T.
Operation Status and Future Plan of J-PARC Main Ring
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2499, (2011)

C-099
Yoshii, M.
Acceleration of High Intensity Proton Beams in the J-PARC Synchrotrons
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2502, (2011)

C-100
Maruta, T.
Longitudinal Beam Acceptance of J-PARC Drift Tube Linac
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2592, (2011)

C-101
Maruta, T.
Beamloss Study at J-PARC Linac by using Geant4 Simulation
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2595, (2011)

C-102
Wei, G.H.
Dependence of Beam Loss on Vacuum Pressure Level in J-PARC Linac
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2598, (2011)

C-103
Morishita, T. et al.
Floor Deformation of J-PARC Linac after the Tohoku Earthquake in Japan
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2601, (2011)

C-104
Hasegawa, K. et al.
Status of J-PARC Accelerator Facilities after the Great East Japan Earthquake
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2727, (2011)

C-105
Hayashi, N. et al.
Injection Energy Recovery of J-PARC RCS
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2730, (2011)

C-106
Tamura, F. et al.
Performance of Multi-harmonic RF Feedforward System for Beam Loading Compensation in the J-PARC RCS
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2733, (2011)

C-107
Ohmori, C. et al.
HIGH GRADIENT MAGNETIC ALLOY CAVITIES FOR J-PARC UPGRADE
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 2885 (2011)

C-108
Watanabe, Y.
Rapid-cycling Power Supplies for the J-PARC RCS Sextupole Magnets
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 3338, (2011)

C-109
Takayanagi, T. et al.
Upgrade Design of the Bump System in the J-PARC 3-GeV RCS
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 3403, (2011)

C-110
Shirakata, M.J. et al.
Collimator Upgrade Plan of the J-PARC Main Ring
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 3496, (2011)

C-111
Sugai, I. et al.
Performance Characteristics of HBC-foils by 650 KeV H– and DC High Intensity Ion Beam Irradiation
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 3502, (2011)

C-112
Wei, G.H.
Possibility of longitudinal painting injection with debuncher system in J-PARC linac
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 3505, (2011)

C-113
Saha, P.K. et al.
Measurement of the Stripping Efficiency for HBC Stripper Foil in the 3-GeV RCS of J-PARC
Proc. of 2nd Int. Conf. Particle Accelerator Conf. (IPAC2011), 3511, (2011)

C-114
Watanabe, Y. et al.
Development of Wide Dynamic Range Power Supply with Combined PWM and PAM Control
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), (2011)

C-115
Ohmori, C. et al.
BACK-UP SCENARIO OF J-PARC RCS CAVITY USING FORCED AIR COOLING
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOMH05 (2011)

C-116
Tani, N. et al.
ALIGNMENT STATUS OF J-PARC ACCELERATOR FACILITY AFTER THE TOHOKU EARTHQUAKE IN JAPAN
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPL04 (2011)

C-117
Hasegawa, K.
STATUS OF J-PARC ACCELERATORS
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS003 (2011)

C-118
Shirakata, M. et al.
ALIGNMENT STATUS OF J-PARC MAIN RING AFTER THE MEGA QUAKE
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS018 (2011)

C-119
Kato, S. et al.
OPTIMIZATION FOR THE ADDITIONAL COLLIMATION SYSTEM OF J-PARC RCS
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS019 (2011)

C-120
Hayashi, N. et al.
INJECTION ENERGY RECOVERY OF J-PARC RCS
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS022 (2011)

C-121
Fan, K. et al.
DESIGN STUDY OF LUMPED INJECTION KICKERS FOR J-PARC MAIN RING
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS023 (2011)

C-122
Yamamoto, K. et al.
FOIL SCATTERING LOSS MITIGATION BY THE ADDITIONAL COLLIMATION SYSTEM OF J-PARC RCS
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS025 (2011)

C-123
Maruta, T.
SIMULATION STUDY ON BEAMLOSS AT J-PARC LINAC BY USING GEANT4
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS025 (2011)

C-124
Igarashi, S. et al.
OPTICS MEASUREMENT AND CORRECTION IN J-PARC MR
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS028 (2011)

C-125
Agari, K. et al.
DESIGN AND DEVELOPMENT OF THE BEAM DUMP FOR J-PARC HADRON-HALL [5]
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS029 (2011)

C-126
Minakawa, M. et al.
ELECTROSTATIC SEPARATORS AT THE J-PARC HADRON HALL
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS030 (2011)

C-127
Schnase, A. et al.
J-PARC MR HORIZONTAL EXCITER TEST FOR TRANSVERSAL NOISE APPLICATION
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS032 (2011)

C-128
Takano, J. et al.
DESIGN STUDY OF SKEW QUADRUPOLE MAGNGNET FOR THE J-PARC MAIN RING
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS033 (2011)

C-129
Hirose, E. et al.
RE-ALIGNMENT PLAN OF MAGNETS AT J-PARC HADRON FACILITY AFTER THE HIGASHI-NIHON EARTHQUAKE
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS038 (2011)

C-130
Fujimori, H. et al.
KICKER SYSTEM FOR THE DECAY MUON BEAMLINE AT J-PARC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS039 (2011)

C-131
Nemoto, Y. et al
PRESENT STATUS OF CRYOGENIC SYSTEM FOR SUPERCONDUCTING SOLENOID AT J-PARC MUSE
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS041 (2011)

C-132
Suganuma, K. et al.
CONNECTOR RENOVATION OF KICKER MAGNET AT J-PARC 3 RCS
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS045 (2011)

C-133
Shirakabe, Y. et al.
COMPARISON OF THE LASER TRACKER SURVEYS FOR THE J-PARC HADRON FACILITY SWITCHYARD BEAMLINE BEFORE/AFTER THE EARTHQUAKE
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS048 (2011)

C-134
Yanaoka, E. et al.
DEVELOPMENT OF DYNAMIC BUMP SYSTEM FOR J-PARC SLOW EXTRACTION
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS052 (2011)

C-135
Watanabe, M. et al.
OPERATION AND CURRENT STATUS OF INJECTION AND EXTRACTION MAGNET AND THE POWER SUPPLY FOR J-PARC 3 GeV RCS
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS055 (2011)

C-136
Satou, K. et al.
UPGRADE SCHEME OF BLM SYSTEM OF J-PARC MR
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS058 (2011)

C-137
Hayashi, N.
INDIVIDUAL BPM RESOLUTION MEASUREMENTS UNDER LINEAR LATTICE ACCELERATORMODEL
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS060 (2011)

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Tejima, M. et al.
BEAM BASED GAIN CALIBRATION METHOD FOR BEAM POSITION MONITOR AT J-PARC MR
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS061 (2011)

C-139
Hashimoto, Y. et al.
CHARACTERISTICS OF A DCCT FOR THE J-PARC MAIN RING
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS064 (2011)

C-140
Omori, Y. et al.
A CALIBRATION METHOD FOR BEAM DCCT OF J-PARC MAIN RING
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS065 (2011)

C-141
Toyama, T. et a.
BEAM-BASED CORRECTION OF A DCCT RESPONSE
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS068 (2011)

C-142
Hatakeyama, S. et al.
MEASUREMENT OF ROTATION ERROR OF BPM AROUND BEAM AXIS IN J-PARC RCS
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS070 (2011)

C-143
Sato, Y. et al.
PROFILE MEASUREMENTS OF PROTON BEAM WITH RESIDUAL GAS IONIZATION PROFILE MONITORS AT J-PARC HADORON FACILITY
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS074 (2011)

C-144
Miura, A. et al.
BEAM LOSS DETECTED BY SCINTILLATION MONITORProc. of 8th Annual Meeting of *Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS077 (2011)*

C-145
Sato, H. et al.
BEAM LOSS PARTICLE TRACKING IN J-PARC LINAC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS078 (2011)

C-146
Akiyama, A. et al.
THE AUTOMATION OF THE MANAGEMENT OF THE MPS FOR J-PARC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS082 (2011)

C-147
Yoshii, A. et al.
EXAMINATION OF APPLYING HADOOP FOR J-PARC DRIVING DATA ARCHIVE
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS083 (2011)

C-148
Suzuki, T. et al.
DEVELOPMENT OF J-PARC LINAC/RCS MPS SUBSYSTEM2
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS085 (2011)

C-149
Kamikubota, N. et al.
PLAN TO DEVELOP OVERALL STATUS SCREENS FOR J-PARC ACCELERATOR COMPLEX
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS089 (2011)

C-150
Kobayashi, Y. et al.
CONSTRUCTION OF CONTROL SYSTEM FOR MUON ROTATING TARGET AT J-PARC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS093 (2011)

C-151
Kawase, M. et al.
PLAN TO DEVELOP OVERALL-CONROL SYSTEM FOR 3GEV SYNCHROTRON ACCELERATOR
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS097 (2011)

C-152
Futatsukawa, K. et al.
UPGRADE OF THE RF REFERENCE SYSTEM FOR THE J-PARC 400 MeV LINAC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS111 (2011)

C-153
Yamanoi, Y. et al.
WATER-COOLED PRODUCTION TARGET AT J-PARC HADRON FACILITY
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS139 (2011)

C-154
Meigo S. et al.
Influence of the great earthquake disaster on the beam transport (3NBT) for high intensity neutron source at J-PARC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS155 (2011)

C-155
Takahashi, H. et al.
REMOTE MAINTENANCE OF BEAM COLLIMATORS AT J-PARC HADRON FACILITY
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS159 (2011)

C-156
Harada, M. et al.
DISPLACEMENT OF BUILDINGS AND STANDARD POINTS IN MLF CAUSED BY THE 2011 OFF THE PACIFIC COAST OF TOHOKU EARTHQUAKE
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS161 (2011)

C-157
Iwahashi, T. et al.
Beam Lines Alignment Status of Neutron Experimental Instruments at J-PARC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS162 (2011)

C-158
Tani, N. et al.
EFFECT OF J-PARC 3GeV RCS ALIGNMENT AFTER THE TOHOKU EARTHQUAKE IN JAPAN
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS164 (2011)

C-159
Morishita, T. et al.
DEFORMATION OF J-PARC LINAC AFTER THE TOHOKU EARTHQUAKE IN JAPAN
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), MOPS165 (2011)

C-160
Tomizawa, M. et al.
IMPROVEMENTS OF SLOW-EXTRACTED BEAM FROM J-PARC MAIN RING
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TULH01 (2011)

C-161
Tamura, F. et al.
MULTI-HARMONIC BEAM LOADING COMPENSATION IN THE J-PARC RCS
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TULH02 (2011)

C-162
Ishii, T.
EFFECT OF THE EARTHQUAKE ON THE J-PARC NEUTRINO FACILITY
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUMH03 (2011)

C-163
Hashimoto, Y. et al.
Simulations of Beam Wake at Injection/Extraction Devices of J-PARC Main Ring
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS085 (2011)

C-164
Hara, K. et al.
SIMULATION CALCULATION OF LONGITUDINAL BEAM DISTRIBUTION IN J-PARC MAIN RING
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS088 (2011)

C-165
Ikegami, M.
EFFECT OF LARGE DTQ ALIGNMENT ERROR FOR J-PARC LINAC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS094 (2011)

C-166
Makimura, S. et al.
REPORT FOR MUON PRODUCTION TARGET WITH PROTON BEAM OPERATION IN J-PARC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS111 (2011)

C-167
Oguri, H. et al.
OPERATION STATUS OF THE J-PARC NEGATIVE HYDROGEN ION SOURCE
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS115 (2011)

C-168
Yoshii, M. et al.
THE STATUS OF MA LOADED RF SYSTEMS IN THE J-PARC SYNCHROTRONS
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS120 (2011)

C-169
Nomura, M. et al.
IMPEDANCE MEASUREMENTS OF RF CAVITIES IN J-PARC SYNCHROTRONS
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS130 (2011)

C-170
Shimada, T. et al.
RF HEATING TEST OF VACUUM RELAYS EMPLOYED TO SHORT ACCELERATION GAPS IN J-PARC MAIN RING
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS140 (2011)

C-171
Ao, H. et al.
ACS CAVITY FOR J-PARC LINAC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS142 (2011)

C-172
Ito, T. et al.
Recovery status of J-PARC linac after Tohoku-Pacific Ocean Earthquake
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS144 (2011)

C-173
Hirano, K. et al.
STUDY FOR RF CHOPPER CAVITIES AT J-PARC LINAC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS149 (2011)

C-174
Kawamura, M. et al.
PRESENT STATUS OF RF SOURCE IN J-PARC LINAC - Recovery from Earthquake Disaster and Energy Upgrade -
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS157 (2011)

C-175
Uota, M. et al.
REMARKABLE PRESSURE RISE AT PUMPING PORT IN J-PARC MAIN RING
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), TUPS162 (2011)

C-176
Ishii T. et al.
EFFECT OF THE EARTHQUAKE ON THE J-PARC NEUTRINO FACILITY
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), Vol 2011, (2011)

C-177
Sato, Y. et al.
BEAM DYNAMICS SIMULATIONS OF J-PARC MAIN RING FOR FAST EXTRACTION OPERATION: BENCHMARKS AND KEYS FOR UPGRADE PLAN BY HIGHER REPETITION"
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2011, Tsukuba, Japan), WELH07 (2011)

C-178
Sato, A. et al.
THE FIRST MUON BEAM MEASUREMENT AT THE MuSIC
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2012, Tsukuba, Japan), Vol 2011, (2011)

C-179
Maki, M. et al.
DEVELOPMENT OF NEW CRYOSTAT FOR LIQUID-Ar TPC DETECTOR
Proc. of 8th Annual Meeting of Particle Accelerator Society of Japan (August 1-3, 2013, Tsukuba, Japan), Vol 2011, (2011)

C-180
Toh, K. et al.
Effects of Gamma-Rays on Polymethylmethacrylate Plastic Optical Fiber under Low Dose-Rate Irradiation
Proc. of the 2011 IEEE Nuclesr Scinece Sympo, M-149 (2011)

C-181
Nakamura, T. et al.
Development of Wavelength-Shifting-Fiber Neutron Image Detector with a Fiber-Optic Taper with a High Spatial Resolution
Proc. of the 2011 IEEE Nuclesr Scinece Sympo, M-179 (2011)

C-182
Sasa, T. et al.
Shielding analysis of the secondary coolant circuit of accelerator driven systems
Steam Generator Systems; Operational Reliability and Efficiency

C-183
Ishikawa, H.
Information Security Countermeasures on J-PARC network infrastructure
平成 22 年度熊本大学総合技術研究会報告集 (CD-ROM)

JAEA Reports

J-001
Yamagishi, H. et al.
A Low Noise ASIC for Two Dimensional Neutron Gas Detector with Performance of High Spatial Resolution (Contract Research)
JAEA-Research 2011-051 (2012)

J-002
Kajimoto, R. et al.
Proceedings of the Workshops on "JAEA Project Researches at J-PARC/MLF"; Sep.29, Oct.28, and Oct.29, 2010, Ibaraki Quantum Beam Research Center, Tokai, Ibaraki, Japan
JAEA-Review 2011-014 (2011)

J-003
Ishikawa, H. et al.
Development of Information Security and Vulnerability Risk Management System for J-PARC
JAEA-Technology 2011-030 (2012)

J-004
Neutron Source Section, Materials and Life Science Division
Technical design report of spallation neutron source facility in J-PARC
JAEA-Technology 2011-035 (2012)

J-005
Sakai, K. et al.
Influence of Great East Japan Earthquake on neutron source station in J-PARC
JAEA-Technology 2011-039 (2012)

J-006
Kinoshita, H. et al.
Result of Study on Storage Plan for Irradiated Components Generated at MLF in J-PARC
JAEA-Technology 2011-040 (2012)

J-007
Koizumi, I. et al.
Repairs crack in concrete floor at 3GeV synchrotron accelerator building
JAEA-Testing 2011-002 (2011)

KEK Reports

K-001
Y. Nemoto
超伝導ソレノイド電磁石用ヘリウム冷凍機の運転および保守管理
KEK Proceedings 2011-2 , Proc. of the Meeting on the Technical Study at KEK KEK, Tsukuba, Japan,

K-002
Muon Science Laboratory
Presentations for the Muon Science Advisory(and the 9th Muon Science Experimental Facility Advisory Committee)
MuSAC
KEK-Proceedings 2011-3

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