

# Operation Status of the J-PARC Ion Source

H. Oguri<sup>#</sup>, K. Ohkoshi, K. Ikegami, S. Yamazaki, A. Takagi, I. Koizumi, and A. Ueno

*J-PARC Center, Tokai, Ibaraki 319-1195, Japan*

*# a corresponding author: [oguri.hidetomo@jaea.go.jp](mailto:oguri.hidetomo@jaea.go.jp)*

A cesium-free negative hydrogen ion source driven with a LaB<sub>6</sub> filament is being operated for J-PARC. The ion source has been providing a beam for approximately eight years without any serious trouble. A photograph of the present J-PARC ion source is shown in Fig. 1. The ion source consists of a cylindrical plasma chamber, a beam extractor and a large vacuum chamber with 2 turbo molecular pumps of 1500 L/s for differential pumping [1]. The source plasma is produced by an arc discharge and confined by a multi-cusp magnetic field produced by permanent magnets surrounding the chamber wall. The 50 keV negative hydrogen beam is extracted by applying about -50 kV to the beam extractor. The basic structure of the ion source has not been changed since the operation was started.

The ion source has been operated in two different modes such as low current mode of 19 mA and high current mode of 32 mA. Continuous operation for about six weeks and about one week was achieved in low and high current mode, respectively. After the operation, we replace the filament by a brand-new one to prevent the filament from failing during the operation. The required time for the replacement including the filament degassing process, the vacuuming and the conditioning operation is about 15 hours. In this presentation, we will introduce the recent operation status of the J-PARC ion source.

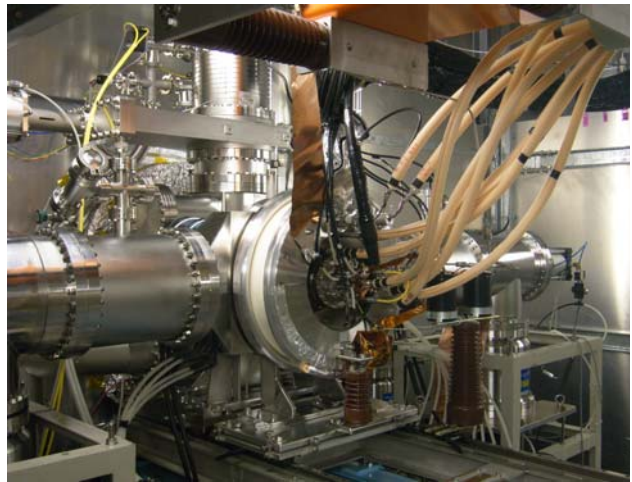


Fig. 1 Photograph of the present J-PARC ion source

## References

- [1] H. Oguri, A. Ueno, K. Ikegami, Y. Namekawa, and K. Ohkoshi, Physical Review Special Topics- Accelerators and Beams 12, 010401 (2009).