New μSR spectrometer installed at D1 area of J-PARC MUSE based on Kalliope detectors

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We have developed a new positron detector system based on pixelled avalanched photo-diode, application specific integrated circuit (ASIC), field programmable gated array (FPGA) and SiTCP data transfer technology. The new detector system is called Kalliope (KEK Advanced Linear and Logic board Integrated Optical detectors for Positrons and Electrons). Using this new detector, we have built a full-spec general-purpose μSR spectrometer and placed at D1 experimental area of Muon Science Establishment (MUSE), J-PARC [1].
The spectrometer has the detector solid angle of 23% and the longitudinal field capability of 4kG. We report the result of the commissioning and the status of its usage in the user programs at J-PARC MUSE.
As an extension of Kalliope system, we have developed a 32-channnel NIM-TDC module. It has a NIM interface board attached to the digital data processing board of Kalliope system. This module is equipped with programmable three NIM inputs and three NIM outputs. These input- and output-registers are used to show DAQ ready status and accepts pulse-wise modulation status for pump-probe μSR measurement.

References

[1] K.M. Kojima in preparation (2014).