

Development of BL06 (VIN ROSE) beam line at J-PARC/MLF

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Abstract

We have developed VIN ROSE (Village of Neutron Resonance Spin Echo spectrometers) at C3-1-2-2(MINE1) beam line at JRR-3 reactor in order to install high intense pulsed neutron source, such as J-PARC (Japan-Proton Accelerator Complex).

The VIN ROSE consists of MIEZE (modulated intensity by zero effort) and NRSE (Neutron Resonance Spin-Echo) [2] to investigate dynamics of condensed matter. We have developed new resonance spin flippers (RSFs) in which Bz coil are iron yoke type [3] and succeeded in measuring MIEZE and NRSE signal in which effective frequencies were 0.6 and 2MHz, respectively. We also have tested TOF-MIEZE spectroscopy at BL10 (NOBORU) beam line at J-PARC and mathematically described TOF-MIEZE spectroscopy. The experimental result was well reproduced by the description. We installed MIEZE spectrometer using the new RSFs to BL05 (NOP) beam line at J-PARC and observed 0.6MHz MIEZE signal.

Our proposal was re-accepted at 2010 and BL06 beam port was temporary assigned since we had no budget to construct the beam line. In 2011, we got a budget from KEK. Recently, we succeeded in fabricating a large-scale supermirror at KURRI. We have already designed BL06 neutron beam line and estimated numerically the performance of radioactive shielding by PHITS code [4]. We also started to prepare key devices, such as neutron supermirror to install it.

In this study, we will show current status of development of BL06 beam line and the concept of VIN ROSE at J-PARC.

References

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