

Performance and the Current Status of the High-Pressure Neutron Diffractometer PLANET

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The PLANET is the world's first neutron beamline specialized for high-pressure and high-temperature experiments. The most characteristic feature is the capability to investigate the state of the matter at high-pressure and high-temperatures up to 20GPa and 2000K with the multi-anvil high-pressure apparatus. The construction was started in 2008. The beamline was commissioned in the first half year of JFY 2012 and the new data is being taken by project members. This year, the beamline is reborn to a public beamline of J-PARC. In this talk, the performance of the PLANET and the typical results are introduced.

The resolution of the diffraction pattern ($\Delta d/d=0.6\%$) was found to be almost equal to the designed value(0.5%). The elimination of the background from the sample surrounding materials, which is the most important feature of the high-pressure experiments, was found to be accomplished with the use of the severe incident collimator and radial receiving collimator system. The beamline is opened for general users since the last half year of JFY2013 (from Feb.).

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