

# Differential Cross-Section Measurements for Thermal Neutron Scattering Law at J-PARC/J-PARC

## における熱中性子散乱則のための微分断面積測定

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Thermal neutron scattering law (TSL) is one of the important nuclear data that affect reactor characteristics such as criticality in the core design of thermal reactors. TSL describes neutron scattering due to atomic and molecular dynamics within materials. Evaluated nuclear data files include the latest TSLs, which were derived by molecular dynamics calculations [1]. The derived TSLs are verified using double-differential cross sections (DDSCSs) and total cross sections, which include thermal-neutron scattering. For this purpose, studies on measuring DDSCSs and/or total cross sections in the neutron energy range from thermal to a few meV have been carried out at the Materials and Life Science Experimental Facility in the Japan Proton Accelerator Research Complex (J-PARC). Preliminary results of graphite, NaCl, KCl, CaH<sub>2</sub>, ZrH<sub>2</sub>, and YH<sub>2</sub> were obtained [2]. This presentation reports on the current status and future plans for DDSCS and total cross section measurements in J-PARC.

### Acknowledgment

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### References

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- [2] A. Kimura et al., "Total and Double Differential Scattering Cross-Section Measurements of Isotropic Graphite", EPJ Web of Conferences 294, 01002 (2024).

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