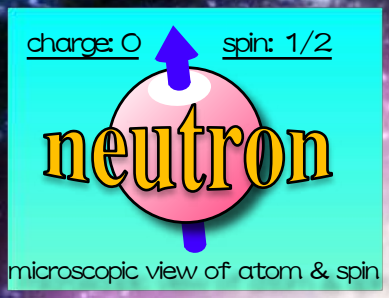
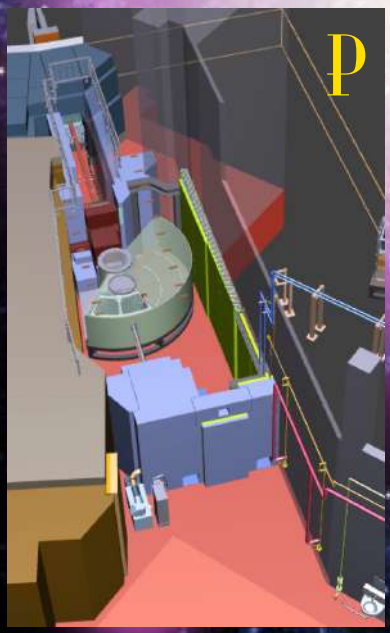
Spatial and temporal view in microscopic level
—Neutron scattering—

Determination of the static arrangement of atoms and spins and their dynamical behavior is the most important to elucidate the mechanism of interested physical phenomena. Neutron scattering technique provides us a precise understanding of them thorough its ability for wide spatial and temporal regimes. We, Tohoku University, manage three neutron instruments installed at the research reactor JRR-3 and develop a state-of-the-art polarized neutron spectrometer at J-PARC, and hereby provide unique opportunities for neutron scattering experiments utilizing these instruments (abbreviated as PATH). Please use them for your own research on a wide range of fields such as from crystal structure analysis of energy-based materials including light elements to magnetic excitations in strongly correlated electron systems.

Tohoku University

Neutron Instruments (PATH)





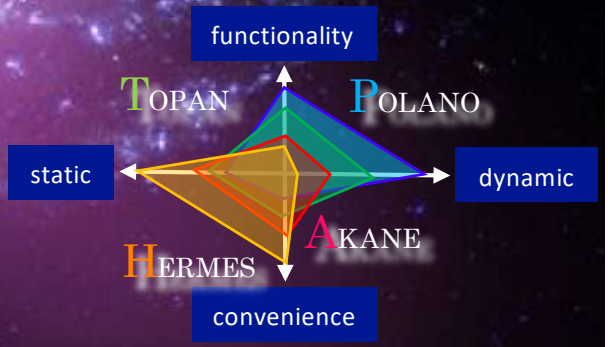
POLANO (P)
Polarization Analysis Neutron Spectrometer

AKANE (A)
Advanced Kinken Neutron Spectrometer

TOPAN (T)
Tohoku-University Polarization Analysis Neutron Spectrometer

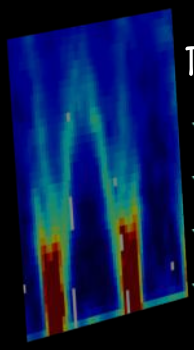
HERMES (H)
Kinken Powder Diffractometer for High Efficiency

diffraction	H
spectroscopy	P, A, T
polarization	P, T



Neutron instruments are open for researchers through joint use

Joint use planned after re-operation of JRR-3 or commissioning of POLANO



PATH view ≒ advancing Science by neutrons ≒

- Crystal and local structure of functional materials including light elements
- Magnetic structure of quantum magnets and spintronics materials
- Multi-scale structure and dynamics in inhomogeneous systems
- Magnon, phonon and composite excitations in strongly correlated electron systems

東北大学

PATH Tohoku University Neutron Instruments

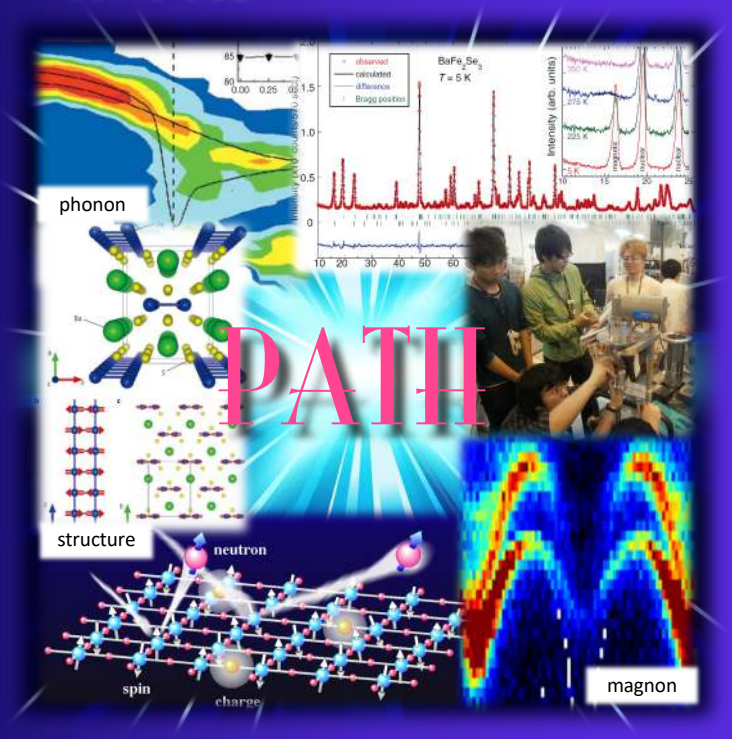
PATH to truth

PATH is a collective term for neutron instruments managed by Tohoku University. HERMES can precisely determine the arrangement of atoms and spins, and their motions are examined by POLANO, AKANE and TOPAN. They are properly used for interested energy and momentum transfer regimes. In addition, POLANO and TOPAN equip polarized option and can disentangle nuclear and magnetic contributions. PATH is operated by Center of Neutron Science for Advanced Materials at Institute for Materials Research, Tohoku University, and we aim to contribute to condensed matter physics and materials science with multi-purposed neutron instruments.

* Institute for Solid State Physics, University of Tokyo will call for proposals in JRR-3.
* Construction and operation of POLANO is carried out jointly with KEK.

POLANO
AKANE
TOPAN
HERMES

Joint Use



How to use

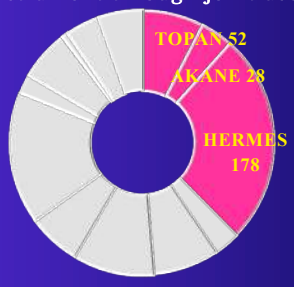
Neutron instruments installed at JRR-3 are operated based upon joint use, and will be open in the end of FY2020 after re-operation of JRR-3. Polarized neutron spectrometer POLANO at J-PARC/MLF, now at the final stage of construction, will be in service after the commissioning. Staff members in IMR will support your use, please feel free to ask the following contacts.

Achievement

Tohoku University has been promoting joint use over 40 years. The number of users every year is total 200 individuals* from 70 groups, and the number of published papers utilizing our instruments exceeds 1/3 of the total papers from the joint use. Furthermore, through practical education, we have produced a large number of experienced researchers being expected to lead future neutron science community.

* Statics before the earthquake 2011.

Published papers for each instrument through joint use



after 2008 (JRR-3 out-of-operation after Nov. 2010)

Directions

Research reactor JRR-3

J-PARC / Materials and Life Science Facility

Institute for Materials Research, Tohoku University

Contact
Center of Neutron Science for Advanced Materials,
E-mail: nc-imr@imr.tohoku.ac.jp
Tel: +81-22-215-2035
Director: M. Fujita

Quantum Beam Materials Physics Division
Tel: +81-22-215-2039
Staff: Y. Nambu, Y. Ikeda, K. M. Suzuki

Institute for Materials Research, Tohoku University
Katahira 2-1-1, Sendai, Miyagi 980-8577, Japan