IUPAP Standing Committee on Major Neutron Sources

Fulvia Pilat, ORNL

IUPAP EC & CC Meeting, October 26-29, 2026

Major Neutron Research Facilities

- Large neutron facilities such as research reactors and accelerator-based spallation neutron sources play a critical role in the global scientific community.
- Their primary mission is to supply high-flux neutron beams that allow scientists to probe the structure and dynamics of matter at atomic and molecular scales.
- Because neutrons are electrically neutral, highly penetrating, and uniquely sensitive to magnetic properties and light elements like hydrogen, they reveal critical information that X-rays or electron microscopes cannot capture.

Outcome from the 34th General Assembly, October 31, 2025

Recognizing the increasing importance of large neutron facilities, the US Liaison Committee submitted a proposal to the 33rd IUPAP General Assembly to create a Working Group dedicated to Major Neutron Research Facilities.

Because the proposed working group aligns with the characteristics of a Standing Committee under a Commission, and that condensed matter researchers are frequent users of these facilities, the 34th IUPAP General Assembly in 2025 resolved to establish the **Standing Committee on Major Neutron Research Facilities (SC-MNRF) under Commission C10** (Structure and Dynamics of Condensed Matter).

with the aims of:

- **bringing together key stakeholders for existing, new, and planned neutron sources to better coordinate plans;**
- **generating more science opportunities for the global science community**
- **advocating for and promote those opportunities**.

Development of a Plan for the SC

- Met with IUPAP Leadership to plan SC (Silvina Ponce Dawson, President, Shobhana Narashiman, Chair of Commission C10, Sekazi Mtingwa, Advisor, Christine Darve, Chair of WG14)
- Developed a list of Committee Members. Guiding principles

  international balance

  focus on "major facilities" (with representation from medium neutron facilities)

  members part of facilities leadership
- Developed Term of Reference (TOR) document (mission + bylaws). Reference example: ICFA, International Committee of Future Accelerators
- Submitted TOR to be presented at the 2026 EC&CC Meeting (October 2026)
- Next step if plan approved: Invite Committee Members to serve

Terms of Reference - mission

- **Mapping the Infrastructure Landscape:** Providing a comprehensive description and outlook of the global neutron research infrastructure for the next 10 to 20 years.
- **Expanding Scientific Opportunities:** Generating new research pathways and opportunities for the global scientific community.
- **Fostering Global Collaboration:** Promoting communication, cooperation, and coordination among stakeholders at existing and planned neutron facilities worldwide.
- **Centralizing Access Documentation:** Gathering and updating documentation regarding accessible neutron facilities and their specific entry and utilization requirements.
- **Training Future Experts:** Enhancing the coordinated training of the next generation of neutron source users and operators.
- **Community Outreach:** Supporting outreach initiatives to improve public and scientific understanding and acceptance of neutron sources and related technologies.

Terms of Reference - bylaws

- The Standing Committee on Major Neutron Research Facilities (SC-MNRF) will meet twice a year: once in person and once remotely.
- The in-person meeting will leverage independently funded attendance of Committee Members at one of the major international or regional neutron science conferences:
- International Conference on Neutron Scattering (ICNS)
- European Conference on Neutron Scattering (ECNS)
- American Conference on Neutron Scattering (ACNS)
- Asia-Oceania Conference on Neutron Scattering (AOCNS)

- The SC-MNRF will also establish dedicated Working Groups to investigate and resolve specific issues pertinent to the SC-MNRF core mission.
- First proposed meeting: European Conference on Neutron Scattering ECNS-2027 Grenoble, June 28 – July 1 2027

Committee Composition

AMERICAS

- LANSCE
- NIST/NCNR
- SNS/HFIR
- Missouri Reactor
- McMaster Reactor
- Centro Atomico Bariloche
- Brazilian Multipurpose Reactor

EUROPE/AFRICA

- ILL
- ESS
- ISIS
- SINQ CNM
- Juelich JCNS
- FRM-II Garching
- SAFARI Reactor ZA

ASIA/AUSTRALIA

- JPARC SNS
- JRR-3 Jaea Tokai
- CSNS Dongguan
- Myanyang Reactor
- HANARO NRF Korea
- ANSTO/OPAL Australia
- FLNP, JINR, Dubna
- PIK Reactor
- Nat. Neutron Facility, BARC

Ex-officio members

- Chair, SC-MNRF
- Chair, Commission Chair
- IUPAP Advisor (Meeting 1)
- Commission Liaison (TBD)
- Commission Liaison (TBD)