

Instrument Process and Fundamental Neutron Physics at the SNS

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SNS will be a USER facility



- User input into the SNS instrument suite
 - Experimental Facilities Advisory Committee + Workshops
- Support (technical, scientific, logistical) for users carrying out experiments
- Peer reviewed proposal system
- 1000-2000 users per year from academia, government, and industry
- Flexible instrument strategy that supports both general user access and dedicated access for expert instrument teams that contribute to construction and operation of instruments
- 5000 hours per year of user operations with high reliability (>90% with >95% as ultimate goal)

Instrument Selection Process



- A process has been developed and is being followed for instrument selection and inclusion in the Project baseline
 - Assemble interested group – an Instrument Advisory Team
 - Write letter-of-intent (LOI)
 - LOI reviewed by Experimental Facilities Advisory Committee (EFAC)
 - EFAC recommends conceptual design study
 - EFAC reviews conceptual design study
 - EFAC recommends preliminary engineering design
 - Preliminary engineering design leads to inclusion of instrument in Project baseline
 - Scientific review of design
 - Engineering design review
 - Project Change Request (PCR)

IAT Instruments



- IAT instruments will be designed, built, and operated by the SNS for the general user community
- Access will be through a peer reviewed proposal system based on scientific merit
 - Open to all
 - No quotas, no tickets
- The SNS construction budget will permit us to build 5+ Best-in-Class instruments out of a possible 24
- The Long Wavelength Target Station (LWTS) will also include an initial suite of instruments following the same model

IDT Instruments



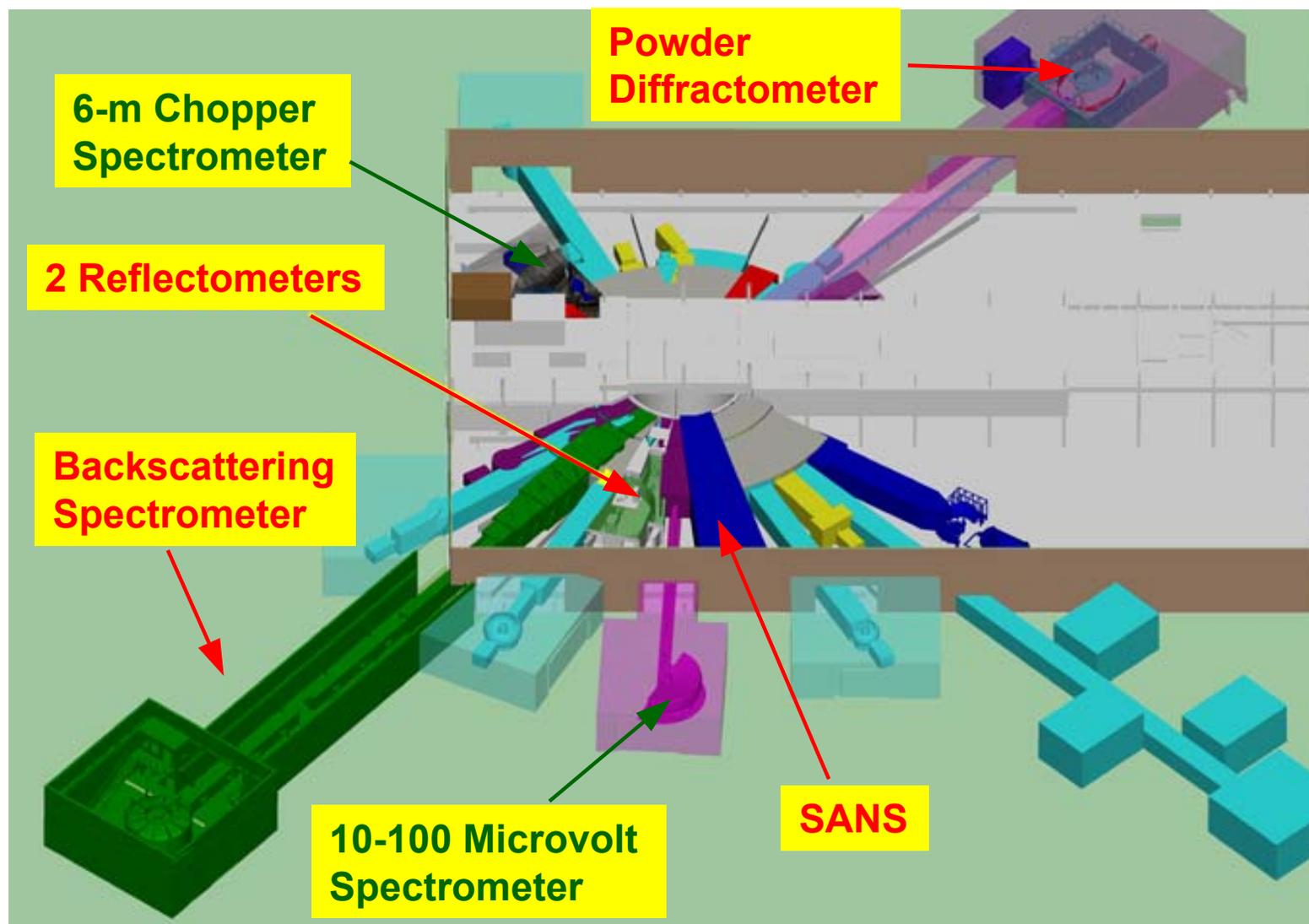
- In addition to access to IAT instruments on an experiment by experiment basis there will be research programs which can benefit from more dedicated access to instruments on a long term basis.
- There may also be requirements for instrumentation tailored to specific research needs of institutions or consortia of institutions who possess the capability to design and build neutron scattering equipment.
- The SNS will provide for this through Instrument Development Teams.
 - The same staged approach to the IAT process will be followed.
 - Letter of Intent.
 - Full Proposal, including conceptual design, funding plan, etc.
 - Up to 60% of the beamtime will be available to the IDT for its own research, the actual beamtime allocation will scale with the fraction of construction and operating funding provided by the IDT.

Current Instrument Concepts



- Ten instruments have been “approved”. (**boldface** = funded)
 - **High-resolution backscattering spectrometer**
 - **Magnetism reflectometer**
 - **Liquids reflectometer**
 - Engineering materials diffractometer
 - **Extended Q-range small-angle diffractometer**
 - **6m chopper spectrometer**
 - **Third generation powder diffractometer**
 - **Inelastic spectrometer with 10-100 microvolt resolution**
 - Disordered materials diffractometer
 - High pressure diffractometer
- Concepts are being developed for additional instruments.
 - 2.5 m chopper spectrometer
 - High-speed single-crystal diffractometer
 - Spin echo
 - Fundamental neutron physics

Instruments in Instrument Hall



IDT Process and FNP@SNS



- For non-scattering applications of SNS the process is somewhat modified:
 - Review is by the SNS Advisory Board
 - Additional criteria include impact of proposed IDT on neutron scattering mission and need for the special characteristics of SNS
 - Need names of external referees for scientific review
 - Since standard proposal system will not be applicable need a description of how beamtime allocation will be performed – SNS Advisory Board would approve the process not the proposals
 - Other elements of the Guidelines for Full Proposals apply.