HySpec: new spectrometer is hosting users and preparing for polarization analysis

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At its core, a Direct Geometry Spectrometer:

- Using features of a Triple Axis Spectrometer:
  - Fermi chopper, 30-420 Hz
  - Detector vessel range -30° to 30° is used to measure CrCl,
  - Incident beam flipping ratio
    - at 15 meV
      - with Mezei flipper 23
      - with high Tc cryo flipper

Hybrid Spectrometer:
- High flux, coarse energy resolution, cold neutron choice among SNS direct geometry spectrometers
- Vertical Bragg focusing
- Variable final flight path

User Program with unpolarized neutrons:

HOPG vertical focusing

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Combining data sets at different detector vessel positions is trivial using Mantid. La0.6Pr0.4NiO3 data measured at detector angles 5-65° and 60-120°.

Detector vessel range -30° to 30° is used to measure CrCl.

Commissioning and Development with Polarized neutrons:

Heusler vertical focusing and polarizing

Polarization Analyzer option 1: He Analyzer Cell Spin-Exchange Optically Pumped

Aberration-corrected coils centered on sample, uniformity to 3E-5 cm

SEOP station attached to detector vessel, with mechanical transfer of polarized gas to optimum shape quartz wide-angle cell

Status: all parts delivered, assembly and offline testing underway

Polarization Analyzer Option 2: Polarizing Supermirror array

Status: Remanent field array ready to ship from PSI. Magnetizer delivered and tested at HySPEC.