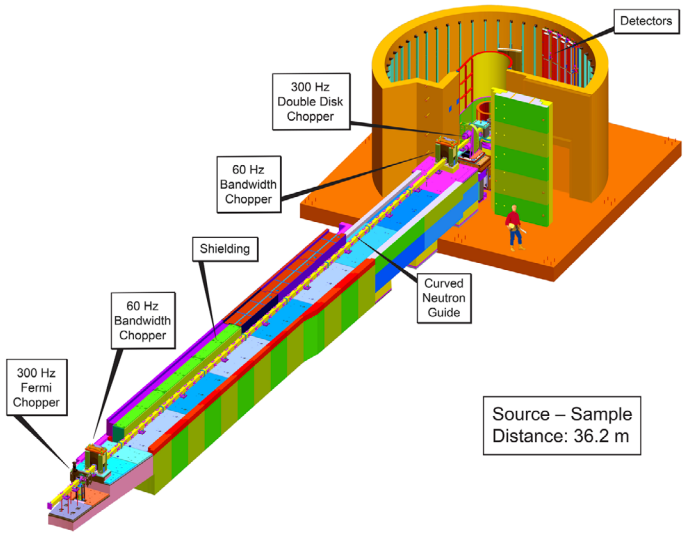
CNCS

Cold Neutron Chopper Spectrometer

Spallation Neutron Source

BEAMLINE 5

CNCS is a high-resolution, direct-geometry, multichopper inelastic spectrometer designed to provide flexibility in choice of energy resolution and to perform best at low incident energies (2–50 meV). Although the current detector coverage around the sample is 1.7 sr, a later upgrade to 3 sr is possible. CNCS experiments typically use an energy resolution between 25 and 500 μeV. A broad variety of scientific problems, ranging from complex and quantum fluids to magnetism and chemical spectroscopy, can be addressed through experiments on the CNCS.



SPECIFICATIONS

Source-to-sample distance	36.2 m
Sample-to-detector distance	3.5 m
Angular coverage	−50° to +140° horizontally ±16° vertically
Energy resolution	10–500 μeV
Incident energy range	0.5–80 meV
Momentum transfer range	0.05–10 $Å^{-1}$
Detector type	^{3}He, Linear position-sensitive detector

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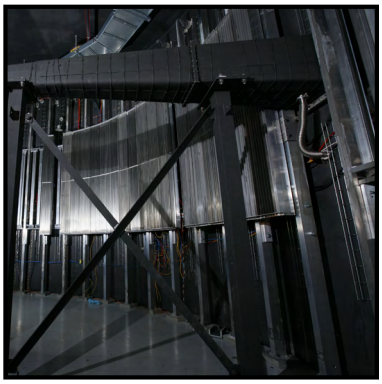
APPLICATIONS

CNCS is applicable primarily to studies in the following:

- Collective excitations in materials (spin waves or phonons) with the single crystal rotation method
- Complex fluids: dilute protein solutions, biological gels, selective absorption of molecules on surfaces
- Dynamics in confined geometries
- Magnetism: low-dimensional systems; non-Fermi liquids; frustrated, disordered, or molecular magnets



For more information, contact

Daniel Pajerowski, pajerowskidm@ornl.gov, 865.574.6276
Andrey Podlesnyak, podlesnyakaa@ornl.gov, 865.242.7920

neutrons.ornl.gov/cncs

OAK RIDGE National Laboratory

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