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High-resolution spectroscopy and diffraction at TRISP

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We present the capabilities of TRISP both for high-resolution spectroscopy and diffraction and show typical experimental examples. TRISP is a thermal three axis spectrometer incorporating the resonant spin-echo technique. Typical applications include the measurement of linewidths of phonons and spin excitations in an energy range 0.5-50meV, and the energy width of quasi-elastic scattering, originating, for example, from critical magnetic fluctuations. Neutron Larmor diffraction (LD) is a high-resolution technique which permits the measurement of lattice spacings d_{hkl} and their distribution Δd_{hkl} . The latter arises, for example, from micro-strains, magnetostriction, structural and magnetic domains, or from a small splitting of Bragg peaks, resulting from distortions of the crystal lattice. The resolution of Larmor diffraction at TRISP is 10^{-6} (relative) for the lattice spacing and one order of magnitude less for the distribution width.

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