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TOFTOF cold neutron time-of-flight spectrometer at MLZ

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TOFTOF is a direct geometry disc-chopper time-of-flight spectrometer located in the Neutron Guide Hall West. It is suitable for both inelastic and quasielastic neutron scattering and the scientific questions addressed range from the dynamics in disordered materials in hard and soft condensed matter systems (such as polymer melts, glasses, molecular liquids, or liquid metal alloys), properties of new hydrogen storage materials to low-energy magnetic excitations in multiferroic compounds, and molecular magnets.

A cascade of seven fast rotating disc choppers which are housed in four chopper vessels is used to prepare a monochromatic pulsed beam which is focussed onto the sample by a converging supermirror section. The scattered neutrons are detected by 1000 ^3He detector tubes with a time resolution up to 50 ns. The detectors are mounted at a distance of 4 m and cover 12 m² (or 0.75 sr). The high rotation speed of the chopper system (up to 22 000 rpm) together with a high neutron flux in the wavelength range of 1.4 -14 Å allows free tuning of the energy resolution between 3 meV and 2 μeV .

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