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The cold neutron three-axis spectrometer IN12 at the ILL

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The cold neutron three-axis spectrometer IN12 is operated by the Juelich Centre for Neutron Science (JCNS) in collaboration with the CEA-Grenoble as a CRG-B instrument at the Institut Laue-Langevin (ILL) in Grenoble, France.

With an upgrade accomplished in 2012 the instrument has been relocated to an end position of a new guide and the whole primary spectrometer has been upgraded.
With a virtual source concept and a new double focussing PG monochromator IN12 has gained a factor of 10 in flux at the sample position with a peak flux of about 10^8 n/sec/cm^2 around k_i = 2 Å^{-1}. An extended wavelength range far into the warmish region (max. $k_i \approx 5.1$ Å^{-1}) is now available.

A velocity selector in the guide ensures a clean beam, and a vertical guide changing system with a transmission polarizing cavity guarantees an easy-to-use polarization set-up.

IN12 is one of the rare spectrometers that can use polarisation analysis in combination with high magnetic fields.

The multi-analyser multi-detector option IN12-UFO is interchangeable with the standard secondary spectrometer and allows to program simultaneous scans in Q-ω space.

We plan the installation of a second monochromator using perfectly bent Si(111) crystals. For lowest accessible wavevector range and energy transfer, it will provide a cleaner signal-to-noise ratio, clean tails of the elastic line and better energy resolution.
Its sharper focussing is advantageous when using high field magnets.

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