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Science from IN13

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The idea to use neutron diffusion in backscattering mode is motivated by the very high instrumental resolution in this special configuration. On the thermal neutron backscattering spectrometer IN13 at the Institut Laue Langevin (ILL), one of the oldest spectrometers operated by a French–Italian Collaborative Research Group (CRG), the energy variation is obtained by adjusting the d-spacing of a monochromator crystal by cooling or heating it. The energy resolution is of the order of 8 ueV. In addition, the relatively high energy of the incident neutrons (16 meV) allows to span a wide range of momentum transfer Q ≤ 4.9 Å-1. The spectrometer IN13 allows the investigation of a space-time window up to 30 Å and 0.1 ns, providing information on single particle motions observed by incoherent neutron scattering. The instrument is mainly devoted to life science, but scientific applications can also be found in areas of material science, solid state physics and chemistry.

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