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## Magnetism: Magnetic order and disorder probed by neutron scattering

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Neutron scattering is a unique technique in magnetism and for correlated electron systems, since it measures directly the Fourier transform of the time-dependent magnetic pair correlations. We give a very brief introduction to magnetic neutron scattering and try to highlight the specificities of this technique with respect to other experimental magnetic probes, such as the unique kinematic range of cold and thermal neutrons for magnetic diffraction and excitations and the spin polarisation for the analysis of more complex magnetic structures. We give some recent examples on ordered and quantum magnetic systems, where we try to underline the complementarity between different techniques, the importance of atomistic calculations for the interpretation of the experimental data and the possibilities with new technical developments, such as the wide angle polarisation set-up PASTIS, recently commissioned on the ILL spectrometer IN20. Finally, we equally highlight examples for the analysis of magnetic thin films with the help of neutron reflectometry.

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Dr Boehm has been working on neutron scattering for more than twenty years. He was an instrument scientist at the cold Three-Axis Spectrometer IN14 at the ILL since 2004. In 2010 he became project leader of the instrument project ThALES, was interim Head of TAS group from October 2015 till June 2016 and is a scientific advisor for the MARMOT project. His scientific interests are closely related to the science case of neutron spectrometers, especially studying the dynamics in quantum magnetic and correlated electronic systems as well as application of new (machine learning) algorithms to inelastic neutron scattering with the aim of accelerating the data acquisition and interpretation.

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