

Inelastic Spherical Neutron Polarimetry on low-dimensional quantum-spin oxides

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It is now well admitted that it is the strong interplay between the structural, magnetic and charge degrees of freedom that is at the origin of most of non-conventional properties observed in low-dimensional highly-correlated electron systems. Among others, this interplay could conduce to the existence of anomalous inelastic correlation functions involving the structural, spin and orbital degrees of freedom (chiral contributions, cross magnetic terms, inelastic nuclear-magnetic interference terms, etc), which could be accurately probed by inelastic spherical neutron polarimetry (SNP). The results of this quest will be presented and discussed at the light of recent studies carried out at the ILL by using CRYOPAD to analyse the inelastic response in the spin-Peierls system CuGeO_3 , the chain-ladder material $\text{Sr}_{14}\text{Cu}_{24}\text{O}_{41}$, the high-Tc material $\text{La}_{1.85}\text{Sr}_{0.15}\text{CuO}_4$ and the quasi-2D planar system $\text{BaCo}_2(\text{AsO}_4)$.