The spin-1/2 frustrated helicoidal afm multferroic system LiCuVO4: Recent Results*

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Lately much attention has been focused on the magnetic and especially the multiferroic properties of the helicoidal quantum afm $LiCuVO_4$. The spin-1/2 Cu^2+ ions of $LiCuVO_4$ form 1D chains. Spin frustration in $LiCuVO_4$ brought about by competing nearest-neighbor (nn) ferromagnetic exchange J_1 and the next-nearest-neighbor (nnn) afm exchange J_2 in these chains leads to helicoidal afm ordering and multiferroic behavior below about 2.5 K. I report and discuss new inelastic and elastic neutron scattering results in which we have studied the two-spinon and the four-spinon continuum and the magnetic structure with and without an electric field by polarized neutron diffraction. I also review a recent controversy on the magnitude of the nn and nnn spin exchange interaction which we resolved by a careful re-investigation of the low-temperature crystal structure, the high-temperature magnetic susceptibilities and new DFT calculations.

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