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Title**: THE QUANTUM KAGOME ANTIFERROMAGNET ZNCU$_3$(OH)$_6$CL$_2$.**

The discovery of Herbertsmithite ZnCu3(OH)6Cl2 has been coined as the ”end to the drought of spin liquids”. It has triggered an intense activity on new kagome materials and related theories for the ground state of the kagome Heisenberg antiferromagnet which has eluded any definitive conclusion for the last twenty years and is the current subject of many new proposals. This is indeed the first experimental example of a kagome lattice where no order has been found at any temperature well below J through all experimental techniques, including μSRa. This illustrates the power of the association of an enhancement of quantum fluctuations for S=1/2 spins with the frustration of antiferromagnetic interactions on the loosely connected kagome lattice to stabilize novel ground states of magnetic matter.
Various experimental results on Herbertsmithite will be reviewed and discussed, including kagome susceptibility as determined by 17 O NMR lineshiftb, the impact of inter-site Cu/Zn mixingb,c on the physics of defects and Dzyaloshinskii-Moriya anisotropy, as evidenced through High Field ESRd. Recent developments on new Cu2+ S=1/2 families and debates which have opened in the comparison with models (e.g. quantum criticality) as well as pending issues on the theoretical and experimental side will be reviewed.
a P. Mendels et al, Phys. Rev. Lett. 98, 077204 (2007). b A. Olariu et al, Phys. Rev. Lett. 100, 087202 (2008). c F. Bert et al, Phys. Rev. B 76, 132411 (2007). d A. Zorko et al, Phys. Rev. Lett. 101, 026405 (2008). e For a review, see P. Mendels and F.Bert, Special Topics Section on ”Novel States of Matter Induced by Frustration”, J. Phys. Soc. Jpn 1, 011001 (2010).