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Title:	Physical realization of a quantum spin liquid based on a complex frustration mechanism
Authors:	Singh, Yogesh (/jspui/browse?type=author&value=Singh%2C+Yogesh)
Keywords:	Unlike conventional Magnetic Moments
Issue Date:	2016
Publisher:	Nature
Citation:	Nature Physics, 12(10), pp.942-949.
Abstract:	Unlike conventional magnets where the magnetic moments are partially or completely static in the ground state, in a quantum spin liquid they remain in collective motion down to the lowest temperatures. The importance of this state is that it is coherent and highly entangled without breaking local symmetries. In the case of magnets with isotropic interactions, spin-liquid behaviour is sought in simple lattices with antiferromagnetic interactions that favour antiparallel alignments of the magnetic moments and are incompatible with the lattice geometries. Despite an extensive search, experimental realizations remain very few. Here we investigate the novel, unexplored magnet $\text{Ca}_{10}\text{Cr}_7\text{O}_{28}$, which has a complex Hamiltonian consisting of several different isotropic interactions and where the ferromagnetic couplings are stronger than the antiferromagnetic ones. We show both experimentally and theoretically that it displays all the features expected of a quantum spin liquid. Thus spin-liquid behaviour in isotropic magnets is not restricted to the simple idealized models currently investigated, but can be compatible with complex structures and ferromagnetic interactions.
Description:	Only IISERM authors are available in the record.
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