

Abstract Submitted
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Spin Glass Order Induced by Dynamic Frustration¹ RAYMOND OSBORN, EUGENE GOREMYCHKIN, Argonne National Laboratory, BRIAN RAINFORD, University of Southampton, UK, DEVASHIBHAI ADROJA, Rutherford Appleton Laboratory, UK, MAREK KOZA, Institut Laue Langevin, France — It is generally believed that both frustration and disorder are essential ingredients in the formation of a spin glass ground state. It was therefore surprising that PrAu_2Si_2 was reported to show all the characteristics of a spin glass, even though it is a stoichiometric compound with a well-ordered crystal structure. We report on inelastic neutron scattering measurements of the crystal field excitations, which show that PrAu_2Si_2 has a singlet ground state and that the exchange coupling is extremely close to the critical value to induce magnetic order. We propose that fluctuations of the crystal field levels are enough to destabilize the induced moments and prevent phase-coherent long-range order, and that spin glass freezing results from this dynamic frustration rather than any intrinsic static disorder.

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