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Spin-antisymmetric Landau-Pomeranchuk instability: hidden order parameter in URu_2Si_2 LIJUN ZHU, C. M. VARMA, University of California, Riverside — We show that the state arising from the Landau-Pomeranchuk instability in spin-antisymmetric channels exhibits long-range correlations of the mutual orientation of spins without any order of single-spin operators. Such a state is expected to show a divergence in the non-linear magnetic susceptibility at the phase transition to a broken spin-orbit rotational state. This conjecture is explicitly shown to be true in mean-field calculations in a simple model suitable for URu_2Si_2. The observed specific heat, the small change in the linear susceptibility, the divergence in the non-linear susceptibility and the change in the transition temperature with an applied uniform magnetic field are quantitatively explained with one parameter. Aspects of the observed anomalous nuclear relaxation in the hidden order parameter phase are also explained.

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