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The Knight shift anomaly in the disordered periodic Anderson model RAIMUNDO DOS SANTOS, NATANAEL COSTA, THEREZA PAIVA, Universidade Federal do Rio de Janeiro, NICHOLAS CURRO, RICHARD SCALETTAR, UC Davis — In some materials, the coherence temperature T^* signals the regime in which one has a heavy-electron fluid and 'dissolved' local moments. An experimental signature of T^* is provided by the Knight shift anomaly in NMR measurements. Further, the contribution of the heavy-electron fluid to the Knigh shift, K_{HF}, displays universal character over a wide range of temperatures. An important probe of the physical mechanisms at play is the random substitution of say, La for Ce in $CeRhIn_5$: this amounts to removing local moments at random sites, and one may wonder whether these universal features are sensitive to the presence of disorder. The Periodic Anderson Model (PAM) captures many aspects of heavy-fermion materials, so here we consider the two-dimensional PAM with a fraction x of the f-sites removed at random. Through Determinant Quantum Monte Carlo simulations we find that universality of K_{HF} persists even in the presence of disorder, which, in turn, allows us to establish that T^* decreases monotonically with x, in agreement with available experimental data. Our simulations also shed light into the low temperature behavior of the disordered PAM at low temperatures: the spin liquid phase of the local moments is suppressed upon dilution.

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