

Magnetic phases of the periodic Anderson model in two dimensions

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We study the ground-state phase diagram of the periodic Anderson model on the square lattice over a range of electron fillings. Using the infinite projected entangled-pair state (iPEPS) method, we resolve magnetic ground states with high accuracy and benchmark them against mean-field results to quantify the role of quantum fluctuations. At half filling, we examine the evolution from antiferromagnetic order to a paramagnetic Kondo-singlet phase as a function of the hybridization strength and the f -level energy. For the hybridization-driven transition, our results show excellent agreement with existing quantum Monte Carlo benchmarks. Away from half filling, at $n = 1.5$ electrons per site, we find a correlated antiferromagnetic diagonal stripe phase as the ground state, closely competing with a ferromagnetic counterpart.

References:

[1] I. Hagymási, Phys. Rev. B **112**, 045118 (2025)

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