

Abstract Submitted
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Quantum Critical Phenomena near Stoner Transition in Two Coupled Quantum Dots with Spin-Orbit Coupling¹ OLEKSANDR ZELYAK, GANPATHY MURTHY, University of Kentucky — We consider a system of two coupled quantum dots. Both the dots and connecting region are assumed to be in universal crossover regimes between Gaussian orthogonal and symplectic ensembles. Using a diagrammatic approach appropriate for energy separations much larger than the level spacing, we obtain the ensemble-averaged one- and two-particle Green's functions. The diffusion and Cooperon parts of the two-particle Green's function are described by separate scaling functions. We then use this information to investigate a model of interacting system in which one dot has Stoner exchange interaction, while the other is non-interacting but contains spin-orbit coupling.

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