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Correlated Spin Dynamics in the 1D Kondo-Lattice including Triplet Scattering

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We present a theoretical investigation of spin correlations and ordering effects in a one-dimensional Kondo-lattice system, which we study for parameters that are typical of ferromagnetic semiconductors. We set up the general dynamical equations of motion for the spin correlations between itinerant and localized spins including interactions between correlations and densities at the scattering level. By computing the correlated dynamics the relevant two-particle correlation functions starting from an uncorrelated initial state, we explore ground state properties of the one-dimensional Kondo-lattice model. We find that the system exhibits long-range correlations at low temperatures, and a maximum of the correlation length at finite temperatures, which can be associated with the Kondo effect. For very low temperatures, Cooper-pair-like correlations, i.e., correlations between opposite spins and momenta with opposite signs, develop.

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