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Kinetic ferromagnetism on frustrated lattices FRANK POLLMANN, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany, KIRILL SHTENGEL, Department of Physics, University of California, Riverside, USA, PETER FULDE, Asia Pacific Center for Theoretical Physics, Pohang, Korea — Systems with frustrated interactions are generally characterized by a high density of low–lying excitations which can be responsible for interesting physical effects. Much attention has been paid to the effects of frustration in antiferromagnetic systems. In this talk, however, we present a model of ferromagnetism arising in a frustrated system. We study strongly correlated electrons described by an extended Hubbard Hamiltonian on a kagome lattice at 1/6 and 1/3 filling. In the limit $|t| \ll V \ll U$ (where t is a hopping amplitude, U is on-site repulsion and V is nearest-neighbor repulsion), we derive an effective low-energy Hamiltonian for this model. The Perron-Frobenius theorem can then be used to show that the ground state of this system is ferromagnetic. We will also address the robustness of ferromagnetism to finite temperature effects and other interactions and discuss possible extensions to other lattices.

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