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Novel spin liquid with a gapped Fermi surface in the kagome Kondo-lattice model GIA-WEI CHERN, University of Virginia, ZHENTAO WANG, Rice University, KIPTON BARROS, Los Alamos National Laboratory — Geometrical frustration in the Kagome lattice is well known as a source of many exotic phases. Here we study the under-screened Kondo-lattice model (KLM) on the kagome lattice at large electron-spin coupling, a regime in which perturbative approaches such as RKKY are invalid. We employ a recently developed linear-scaling, dynamical sampling method to study the KLM on large kagome lattices. At low temperatures, our simulations uncover an intriguing classical spin liquid phase with short-range correlations. Surprisingly, when $T \rightarrow 0$ a wide gap in the electronic spectrum can appear at any filling fraction between 0.5 to 0.63. We characterize this new spin liquid and discuss the origin of spontaneous gap formation.

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