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Mott transition in Kagomé lattice Hubbard model TAKUMA OHASHI, Condensed Matter Theory Laboratory, RIKEN, NORIO KAWAKAMI, Department of Physics, Kyoto University, HIROKAZU TSUNETSUGU, Institute for Solid State Physics, University of Tokyo — We investigate the Mott transition in the Kagomé lattice Hubbard model using the cellular dynamical mean field theory. The calculation of the double occupancy, the density of states, the static and dynamical spin correlation functions demonstrates that the system undergoes the first-order Mott transition at the Hubbard interaction $U/W \sim 1.4$ (W: bandwidth). In the metallic phase close to the Mott transition, we find the strong renormalization of three distinct bands, giving rise to the formation of heavy quasiparticles with strong frustrated interactions. It is elucidated that the quasiparticle states exhibit anomalous behavior in the temperature-dependent spin correlation functions. We also find a dramatic change of the dominant spin fluctuations around the Mott transition. The spin fluctuations in the insulating phase favor down to the lowest temperature a spatial spin configuration in which antiferromagnetic correlations are strong only in one chain direction but almost vanishing in the others.

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