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Density-matrix renormalization group study of triangular and square Hubbard models SHIGETOSHI SOTA, RIKEN AICS, TAKAMI TOHYAMA, Tokyo University of Science, TOMONORI SHIRAKAWA, SEIJI YUNOKI, RIKEN — We perform large-scale density-matrix renormalization group calculations for two-dimensional Hubbard models with a triangular lattice and a square lattice [T. Tohyama, K. Tsutsui, M. Mori, S. Sota, and S. Yunoki, Phys. Rev. B **92**, 014515 (2015)]. In the triangular Hubbard model, we determined a boundary between metal and insulator and a boundary between spin-liquid and antiferromagnetic phases. The presence of spin-liquid phase is confirmed by spin-spin correlation function. In the square Hubbard model, we introduce a second-neighbor hopping interaction and calculate the dynamical spin correlation function to clarify the doping dependence of magnon excitations. We find a shift of a peak position toward higher energy in the electron-doped side, being consistent with recent resonant-inelastic x-ray scattering.

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