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Magnetic order in the doped Hubbard model and the crossover from two- to three-dimensions: a Hartree-Fock study[1] JIE XU, ERIC J. WALTER, SHIWEI ZHANG, College of William and Mary — We report unrestricted Hartree-Fock (UHF) results for the ground state of the single-band Hubbard model in three-dimensions (3D), with repulsive onsite interactions and nearest-neighbor hopping. Magnetic and charge properties are determined by full numerical solutions of the self-consistent UHF equation in large supercells, and quantified as a function of hole doping h. We focus on weak to intermediate interaction strengths, where UHF has been shown to capture the main characteristics of the magnetic correlations in two-dimensions (2D). [2] We find linear spin-density wave (SDW) states with AFM order and a long wavelength modulation whose wavelength is inversely proportional to h. We also study the dimensional crossover from 2D to 3D as the inter-plane distance is increased.

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[2]J. Phys.: Condens. Matter, in press (arXiv:1107.0976v2).

Jie Xu
College of William and Mary

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