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Inhomogeneous phases of itinerant antiferromagnets LEONID ISAEV, GERARDO ORTIZ, Indiana University - Dep. of Physics, CRISTIAN D. BATISTA, Los Alamos National Lab — Although magnetic properties of high-Tc cuprates and heavy fermion compounds has received great attention, only little investigation was performed in the purely antiferromagnetic (AF) phases of these materials. For instance, the mechanism of suppression of the magnetic order was never addressed. In the present work we use a 3D repulsive Hubbard model in an external magnetic field with anisotropic hopping parameters to show that this suppression occurs through a sequence of inhomogeneous states, which are coexisting charge/spin density waves and can be mapped onto the usual Larkin-Ovchinnikov states of type-II superconductors. At the mean-field level we compute the phase diagram of this model as a function of doping and lattice anisotropy. It is shown that morphology of the inhomogeneous phases is determined by the topology of the Fermi surface, which is controlled by the anisotropy (Lifshitz transitions). Insight into the properties of collective modes, such as damping, is gained by computing the magnetic response function in the random phase approximation. Our results are directly applicable to the striped phase of the nickelates and may be useful for understanding the interplay between AF and superconducting orders in the underdoped phase of high-Tc and heavy fermion materials.

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