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**Large-scale simulations of spin-density-wave order in frustrated lattices** KIPTON BARROS, CRISTIAN BATISTA, Los Alamos National Laboratory, GIA-WEI CHERN, University of Virginia — We investigate spin-density-wave (SDW) phases within a generalized mean-field approximation. This approach incorporates the thermal fluctuations of SDW order and the development of short-range order above magnetic ordering temperatures  $T_c$ . Using a new Langevin dynamics method, we study mesoscale structures associated with triple- $\mathbf{Q}$  SDW states that are induced by Fermi surface nesting in triangular and kagome lattice Hubbard models. The core of our linear-scaling Langevin dynamics simulations is an efficient stochastic kernel polynomial method for computing the electron density matrix. We also investigate exotic phases above  $T_c$  arising from preformed magnetic moments.

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