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Quantum Nematic Physics in the Hubbard Model of Cuprate Superconductors SHI-QUAN SU, GONZALO ALVAREZ, MICHAEL SUMMERS, THOMAS MAIER, Oak Ridge National Lab — Recent experiments have provided strong evidence that quantum electronic nematic order plays an important role in characterizing the pseudogap region of the cuprate superconductors. Starting from the generic Hubbard model of the cuprates, we introduce a small anisotropy in the hopping integral to model a small orthorhombic distortion. We perform a dynamic cluster quantum Monte Carlo approximation of this model, in order to study the effects of this anisotropy on various properties. In particular, we investigate the effects on superconductivity and pseudogap behavior, as well as the competition between different effects.

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