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Interplay between parallel and diagonal electronic nematic phases in interacting systems HAE-YOUNG KEE, HYEONJIN DOH, NIR FRIEDMAN, Dept. of Physics, Univ. of Toronto, Canada — An electronic nematic phase is a spontaneous broken state of a discrete rotational symmetry of a given crystal. There exist two distinct electronic nematic phases in a square lattice. One is the parallel nematic order which breaks the symmetry in x- and y-direction, and the other is the diagonal nematic order which breaks the diagonal $(x + y)$ and the anti-diagonal $(x - y)$ symmetry. We investigate the different features and the mutual interaction between these two nematic orders. We also discuss the possible implication of our results in the context of neutron scattering and Raman spectroscopy measurements in high T_C superconductors.

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