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Domain Walls in Normal and Superconducting States of Iron Pnictides HUAIXIANG HUANG, DEGANG ZHANG, TAO ZHOU, C.S. TING, University of Houston — The electronic and magnetic structures in the normal and superconducting states of iron pnictides are investigated by solving self-consistently the Bogoliubov-de Gennes equation. It is shown that strong electron correlations can induce domain walls, which separate regions with different spin density wave orders. At zero or low electron doping, 90° domain walls are formed while anti-phase domain walls are produced at higher electron doping. On the domain walls, there always exist larger electron densities. The results agree qualitatively with recent observations of scanning tunneling microscopy and superconducting quantum interference device microscopy.

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