

Abstract Submitted  
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**The influence of domain walls in the incommensurate charge density wave state of Cu intercalated 1T-TiSe<sub>2</sub>** SHICHAO YAN, DAVIDE IAIA, Department of Physics and Frederick Seitz Materials Research Laboratory, University of Illinois Urbana-Champaign, Urbana, Illinois 61801, USA, EMILIA MOROSAN, Department of Physics and Astronomy, 6100 Main Street, Rice University, Houston, TX 77005, USA, EDUARDO FRADKIN, PETER ABBAMONTE, VIDYA MADHAVAN, Department of Physics and Frederick Seitz Materials Research Laboratory, University of Illinois Urbana-Champaign, Urbana, Illinois 61801, USA — We report a low-temperature scanning tunneling microscopy study of the charge density wave (CDW) order in 1T-TiSe<sub>2</sub> and Cu<sub>0.08</sub>TiSe<sub>2</sub>. In 1T-TiSe<sub>2</sub> we observe a long-range coherent commensurate CDW (C-CDW) order. In contrast, Cu<sub>0.08</sub>TiSe<sub>2</sub> displays an incommensurate CDW (I-CDW) phase with localized C-CDW domains separated by domain walls. Density of states measurements indicate that the domain walls host an extra population of fermions near the Fermi level which may play a critical role in the emergence of superconductivity in this system. Fourier transform scanning tunneling spectroscopy studies show that the dominant mechanism for CDW formation in the I-CDW phase is electron-phonon coupling.

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