

Abstract Submitted  
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**Observation of a Charge Density Wave Incommensuration Near the Superconducting Dome in  $\text{Cu}_x\text{TiSe}_2$**  ANSHUL KOGAR, Massachusetts Institute of Technology, GILBERTO ANTONIO DE LA PENA, SANGJUN LEE, YIZHI FANG, STELLA X.-L. SUN, University of Illinois at Urbana, DAVID B. LIOI, GORAN KARAPETROV, Drexel University, KENNETH D. FINKELSTEIN, JACOB P.C. RUFF, Cornell High Energy Synchrotron Source, PETER ABBA-MONTE, University of Illinois at Urbana, STEPHAN ROSENKRANZ, Argonne National Laboratory — X-ray diffraction was employed to study the evolution of the charge density wave (CDW) in  $\text{Cu}_x\text{TiSe}_2$  as a function of copper intercalation in order to clarify the relationship between the CDW and superconductivity. The results show a CDW incommensuration arising at an intercalation value coincident with the onset of superconductivity at around  $x=0.055(5)$ . Additionally, it was found that the charge density wave persists to higher intercalant concentrations than previously assumed, demonstrating that the CDW does not terminate inside the superconducting dome. A charge density wave peak was observed in samples up to  $x=0.091(6)$ , the highest copper concentration examined in this study. The phase diagram established in this work suggests that charge density wave incommensuration may play a role in the formation of the superconducting state.

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