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**Yi Chen**

UC Berkeley, USA

[yi\\_chen@berkeley.edu](mailto:yi_chen@berkeley.edu)

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## **Local probe studies of charge density wave in monolayer TaSe<sub>2</sub>**

Metallic transition metal dichalcogenides (TMDs) are ideal platforms for exploring collective electronic phases such as charge density wave (CDW) order and superconductivity. Bulk 2H-TaSe<sub>2</sub>, a well-studied CDW system, is known to undergo an incommensurate CDW transition at T=122K and a commensurate CDW transition at T=90K. Reducing TaSe<sub>2</sub> sample thickness to the single-layer limit is expected to affect this behavior due to the absence of inter-layer coupling and corresponding transition to two-dimensionality. Here we present an electronic structure study of single-layer TaSe<sub>2</sub> by means of scanning tunneling microscopy/spectroscopy, angle-resolved photoemission spectroscopy, and first-principle simulations. We observe charge ordering in monolayer TaSe<sub>2</sub>, thus providing new insight into the interplay between charge order and dimensionality in this model CDW system.