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**The Role of Electron-Phonon Coupling in the CDW phase transitions in TaSe<sub>2</sub>** YUE CAO, ZHE SUN, QIANG WANG, JIXIA DAI, KYLE MCELROY, MICHAEL HERMELE, University of Colorado, HELMUTH BERGER, Institute of Condensed Matter Physics, EPFL, Switzerland, DANIEL DESSAU, University of Colorado — In this talk, we will report our research progress of the classical charge density wave material 2H-TaSe<sub>2</sub>. The formation of the CDW can be driven by the electronic instability or by the interplay between electrons and phonons, which is an essential ingredient of CDW. In this talk, we will provide a novel analyzing technique that can help distinguish the two scenarios. We will discuss the three possible nesting schemes in this talk and compare its electronic instability. We employ a novel band dissected technique to analyze the characteristic correlation functions for the CDW phase. By comparing the electronic instability to the actual band folding in the incommensurate CDW phase, we can tell the role of electronic structure / electron phonon coupling in this material. This discussion will help improve our understanding of the CDW and of the nesting picture in general.

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