

Abstract Submitted  
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**Variable Temperature Scanning Tunneling Microscope study on CDW material 2H-TaSe<sub>2</sub>** JIXIA DAI, YUE CAO, EDUARDO CALLEJA, DANIEL DESSAU, Department of Physics, University of Colorado at Boulder, Boulder, CO 80302, HELMUTH BERGER, Department de Physique, EPF Lausanne, CH-1015 Lausanne, Switzerland, KYLE MCELROY, Department of Physics, University of Colorado at Boulder, Boulder, CO 80302 — As a layered quasi-2D material, 2H-TaSe<sub>2</sub> has a very rich phase diagram including a second order phase transition at 122K, a first order phase transition at 90K, and a superconductivity transition at 133mK. With our UHV Scanning Tunneling Microscope, we have performed temperature-controlled STM work to study the incommensurate and commensurate CDW phases of 2H-TaSe<sub>2</sub>, from 77K to 110K. We will present temperature and tunneling bias voltage dependant topograph data, together with IV and dI/dV spectra in order to help understanding the nature of these two different CDW phases and the gapping mechanism of this material.

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