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Strain tuning of electronic phase transitions in atomically thin transition metal dichalcogenide metals SHENGWEI JIANG, HONGCHAO XIE, KAIFEI KANG, Pennsylvania State University, HELMUTH BERGER, LSZL FORR, Institute of Physics of Condensed Matter, Ecole Polytechnique Fdrale de Lausanne, JIE SHAN, KIN FAI MAK, Pennsylvania State University — Atomically thin transition metal dichalcogenide (TMD) metals have aroused considerable interests recently, owing to their rich collective phenomena, such as the coexistence of charge-density-wave (CDW) order and superconductivity down to the monolayer limit. The ultrathin and flexible nature of the atomically thin TMD metals also opens the possibilities for control of these electronic phase transitions by elastic strain engineering. In this talk, we present our results on continuous and reversible tuning by strain of the superconducting transition in atomically thin NbSe₂. Suspended samples of atomically thin NbSe₂ were studied by transport measurements whereas a variable tensile stress was applied to the samples through an electrostatic force. The physical mechanism for the observed strain dependence of the superconducting transition temperature will be discussed.

Shengwei Jiang
Pennsylvania State University

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