

Abstract Submitted
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Role of impurities in the charge density wave state of transition metal dichalcogenides¹ JUNICHI OKAMOTO, ANDREW MILLIS, Columbia University — Motivated by recent scanning tunneling microscope (STM) measurements of NbSe₂ which revealed the formation of charge density wave (CDW) droplets around impurities even at temperatures of the order of three times the transition temperature [1], we present a theory of impurity-induced CDW formation, and examine its consequences for the thermodynamic phase transition and low temperature ordered phases. Our fits to the STM measurements suggest that the CDW is strongly pinned by impurities, so that a standard theory predicts that even at lowest temperature the material should be in the disordered phase. We present a new theoretical picture explaining how to reconcile the experimental observation of a sharp transition with the strong pinning. [1] S. P. Chockalingam *et al.* (submitted to PNAS)

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