

Abstract Submitted
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Optical coherence in atomic monolayer transition metal dichalcogenides limited by electron-phonon interactions¹ PRASENJIT DEY, JAGANNATH PAUL, University of South Florida, ZEFANG WANG, Pennsylvania State University, CHRISTOPHER STEVENS, CUNMING LIU, University of South Florida, ALDO ROMERO, West Virginia University, JIE SHAN, Pennsylvania State University, DAVID HILTON, University of Alabama Birmingham, DENIS KARAIKSKAJ, University of South Florida, ALDO ROMERO COLLABORATION, ZEFANG WANG, JIE SHAN COLLABORATION, DAVID HILTON COLLABORATION — We systematically investigate the excitonic dephasing of three representative transition metal dichalcogenides, namely MoS₂, MoSe₂ and WSe₂ atomic monolayer thick and bulk crystals, in order to gain proper understanding of the factors that determine the optical coherence in these materials. Coherent nonlinear optical spectroscopy, temperature dependent absorption combined with ‘ab initio’ theoretical calculations of the phonon spectra, indicate electron-phonon interactions to be the limiting factor.

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Prasenjit Dey
University of South Florida

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