Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Interlayer Exciton Lifetimes in MoSe2/WSe2 Heterostructures

KYLE SEYLER, No Company Provided, PASQUAL RIVERA, University of Washington, HONGYI YU, University of Hong Kong, JOHN SCHAIBLEY, University of Washington, JIAQIANG YAN, DAVID MANDRUS, University of Tennessee, Oak Ridge National Lab, WANG YAO, University of Hong Kong, XIAODONG XU, University of Washington — Semiconductor heterostructures of two-dimensional (2D) transition-metal dichalcogenides (TMDs) have emerged as an exciting new platform for novel device engineering and physics. A fundamental question for the field is how the strong Coulomb interactions, electronic structure, and underlying valley physics affect the optoelectronic response. While researchers have made significant progress in understanding intralayer exciton dynamics in monolayer TMDs, there is comparatively little understanding of the interlayer excitons that form in their heterostructures. In this talk, we will report on time-resolved photoluminescence experiments of interlayer excitons in MoSe2/WSe2 vertical heterostructures, which show wide tunability with gate and variability with emission energy. We will also discuss the underlying mechanisms for this behavior and show how it can be utilized to generate long-lived valley excitons.

Kyle Seyler
No Company Provided

Date submitted: 30 Nov 2015

Electronic form version 1.4