

Title: Excitons in 1D and 2D semiconductors

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Abstract:

Excitons in van der Waals semiconductors interact strongly with light and have been the subject of intense investigation for future optoelectronic applications. In this presentation, I will report our recent studies on excitons in MoSe₂ and WSe₂ heterostructures, including measurements on the spatial coherence of interlayer excitons, and the localization of excitons using lithographically defined graphene gates. I will also discuss our recent studies on a one-dimensional van der Waals semiconductor SbPS₄. SbPS₄ can be exfoliated using the scotch tape method to yield long (several micron) nanobundles with typical thicknesses of 1-100 nm. The nanobundles emit ultra-broadband and bright photoluminescence when excited with 400 nm light.