Mar 29, 2021 10:00 AM
QED & Materials seminar
Chin Shen Ong

Title
"Excitons in Quasi-2D Semiconductors"

Abstract
Using the GW and GW-BSE theoretical approaches, linear and nonlinear optics, we investigated selected phenomena for excitons for quasi-2D semiconductor. We:

- Predict an antiscreening effect when it is supported by metal.
- Demonstrate that Berry phase can lead to splitting of the 2p exciton states that have very large intraexciton transition dipole moments.
- Observed bright excitons with negative-mass electrons.
- Demonstrate the existence of strongly-coupled exciton-phonon interactions.

[1] M. I. B. Utama, H. Kleemann, W. Zhao, C.-S. Ong, F. H. da Jornada, D. Y. Qiu, …, A. Zettl, S. G. Louie, F. Wang.
Nature Electronics 2, 60–65 (2019). (Also featured on Nat. Electron News & Views)
[2] C.-K. Yong, M. I. B. Utama, C.-S. Ong, T. Cao, …, A. Zettl, S. G. Louie, F. Wang. Nature Materials, 1 (2019).