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**Effective Mass Theory of 2D Excitons Revisited** JOSEPH GONZALEZ, IVAN OLEYNIK, University of South Florida — Two-dimensional (2D) semiconducting materials possess an exceptionally unique set of electronic and excitonic properties due to the combined effects of quantum and dielectric confinement. Reliable determination of exciton binding energies from both first-principles many-body perturbation theory (GW/BSE) and experiment is very challenging due to the enormous computational expense as well as the tremendous technical difficulties in experiment.. Very recently, effective mass theories of 2D excitons have been developed as an attractive alternative for inexpensive and accurate evaluation of the exciton binding energies. In this presentation, we evaluate two effective mass theory approaches by Velizhanin *et al* [1] and Olsen *et al* [2] in predicting exciton binding energies across a wide range of 2D materials. We specifically analyze the trends related to the varying screening lengths and exciton effective masses. We also extended the effective mass theory of 2D excitons to include effects of electron and hole mass anisotropies ($m_x \neq m_y$), the latter showing a substantial influence on exciton binding energies. The recent predictions of exciton binding energies being independent of the exciton effective mass and a linear correlation with the band gap of a specific material are also critically reexamined. 1. K. A. Velizhanin et al., Phys. Rev. B, **92**, 195305 (2015). 2. T. Olsen et al., Phys. Rev. Lett. **116**, 056401 (2016).

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