Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Spatially indirect exciton condensate in bilayer systems FEI XUE, FENGCHENG WU, ALLAN MACDONALD, Department of Physics, University of Texas at Austin — Bilayer equilibrium exciton condensates have attracted attention in recent years because of their interesting and anomalous transport properties. Here we report on the microscopic derivation of bosonic effective Hamiltonians which include exciton-exciton interaction terms and account realistically for band-structure and dielectric environment effects. We describe in detail the microscopic origin of different contributions to exciton-exciton interaction. We apply our theory to the case of transition metal dichalcogenides, addressing specifically the role of the excitonic flavor multiplicity in that system.

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Date submitted: 14 Nov 2014 Electronic form version 1.4