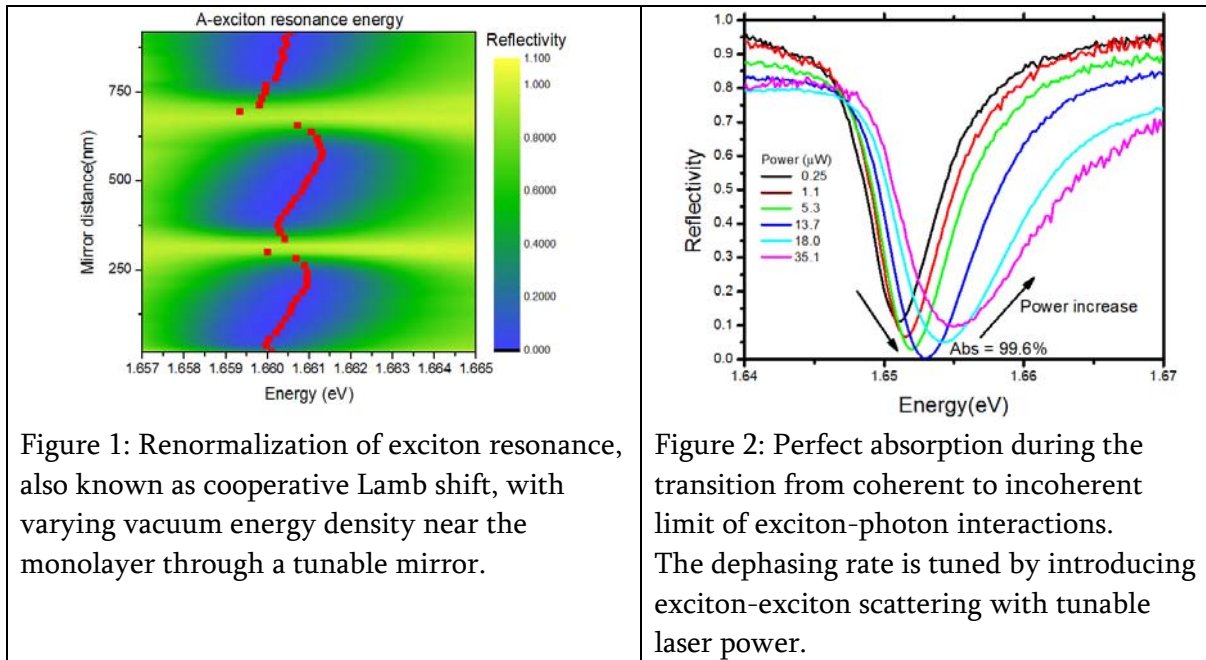


COHERENT LIGHT-MATTER INTERACTIONS IN 2D SEMICONDUCTORS

Jason HORNG and Hui DENG

Department of Physics, University of Michigan, Ann Arbor, MI, USA
dengh@umich.edu

Van der Waals semiconductors feature excitons with exceptionally strong exciton-photon interactions. We discuss here the possibility to tune between incoherent and coherent regimes of exciton-photon interaction in monolayer transitional metal dichalcogenides (TMDs) using a simple mirror. Coherent interaction between excitons and free-space light field can be established, without a cavity, allowing direct observation of cooperative Lamb shift of the excitons [1] (Fig. 1), diminishing absorption in coherent limit, and perfect absorption under a robust critical coupling condition [2] (Fig. 2). These results suggest new possibilities in sensing and precision measurements.



References

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