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Optical response of transition-metal dichalcogenides in electric and magnetic fields THOMAS GARM PEDERSEN, JONAS HAVE, Aalborg University — Semiconducting transition-metal dichalcogenides (TMDs) are characterized by unique optical properties. In their monolayer form, MoS_2, $MoSe_2$, WS_2, and WSe_2 are direct band gap materials with exciton binding energies reaching several hundred meVs. The excitonic optical response can be manipulated by external electric or magnetic fields. Importantly, excitons can be ionized by strong electric fields, which is crucial for efficient photocurrent generation. In this presentation, we use the Wannier exciton model to study the excitonic response in external fields [1,2]. Specifically, we compute Stark, Franz-Keldysh and Landau shifts of bound and continuum excitons. In addition, we investigate the field dependence of the exciton ionization rate. The experimental signatures of external fields are studied for a range of different TMDs in various dielectric environments. 1. T. G. Pedersen *et al.*, Exciton ionization in multilayer transition-metal dichalcogenides, New J. Phys. 18, 073043 (2016). 2. T. G. Pedersen, Exciton Stark shift and electroabsorption in monolayer transition-metal dichalcogenides, Phys. Rev. B. 94, 125424 (2016).

Thomas Pedersen
Aalborg Univ

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