



Solid State Institute
המכון למצב מוצק

TECHNION
Israel Institute
of Technology



הטכניון
מכון טכנולוגי
לישראל

SPECIAL SEMINAR

סמינר מיוחד

Doping dependent exciton dynamics in a monolayer WSe₂

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Abstract

Since the first observation of photoluminescence from a monolayer of MoS₂, studies of monolayer-thick semiconducting transition metal dichalcogenides (TMDCs) have brought a number of interesting discoveries. The unique optical properties are determined by strong excitonic effects, the inversion-lacking hexagonal crystal symmetry and very strong spin-orbit interactions. As a result, monolayers of TMDCs are able to host different neutral and charged excitonic complexes. WSe₂ exhibits a very large range of such complexes because of its excitonic band inversion. Research into exciton properties has focused on studies of undoped or electron-doped WSe₂ because of the small spin splitting of the conduction band. In this talk, I will show that the large spin splitting of the valence band provides insight into interactions between different excitonic complexes and the role of localization in their dynamics. I will show that the binding of excitons into larger complexes occurs *via* phonon or free carrier scattering and discuss the role of disorder in the process. These experiments shed light on the potential of using WSe₂ for non-classical light emitters.

*Refreshment at 12:15

*כיבוד ב-12:15

ההרצאה תתקיים ביום שני, ה-10.2.20 בשעה 12:30*
באודיטוריום המכון למצב מוצק, קומת כניסה

The lecture will take place on Monday, 10.2.20 at 12:30*
at the Solid State Institute auditorium, entrance floor

Host: Professor Gadi Eisenstein