Solid State Institute
המכון למצב מוצק

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סמינר

Magneto-optical studies of confined charge carriers in semiconductor quantum dots

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Abstract

Quantum dots are three dimensional nanostructures realized in semiconducting materials. As such quantum dots form promising venue for quantum information processing future technologies. Since they form excellent interface between photons ("flying qubits") and confined carriers' spins ("anchored qubits"), they are considered as building blocks for future quantum communication and entanglement distribution between remote nodes.

Externally applied magnetic field is a common tool for controlling quantum dot confined spin qubits. Therefore, understanding and characterizing the magneto-optical properties of charged quantum dots is essential for future scientific and technological development in this front.

I will present a novel set of polarization sensitive photoluminescence spectral measurements of a negatively and positively charged quantum dot, subject to externally applied magnetic fields in various magnitudes and directions. All the spectral measurements are compared with a relatively simple theoretical model, which considers the Zeeman interaction between the confined carriers and the external field, as well as the exchange interaction between confined electrons and holes. The comparison between the calculated and measured spectra and optical selection rules provides novel understanding and characterization tools for confined charge carriers in semiconductor quantum dots.

ההרצאה תתקיים ביום רביעי, ה-15.12.21 בשעה 12:30
באודיטוריום המכון למצב מוצק, קומת כניסה
The lecture will take place on Wednesday, 15.12.21 at 12:30
at the Solid State Institute auditorium, entrance floor

M.Sc. Student of Professor David Gershoni