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Tunable valley polarization of quantum confined excitons in WSe₂
SAJAL DHARA, CHITRALEEMA CHAKRABORTY, KENNETH GOODFELLOW, NICK VAMIVAKAS, Univ of Rochester — The discovery of single photon emitters in two dimensional transition metal dichalcogenides opens up a new research direction in the field of two-dimensional layered materials. In order to understand the origin of the quantum confinement that is responsible for these localized excitonic states we perform polarization resolved optical measurements. The quantum dots are embedded in a diode-like device to control the quantum dot energy levels via the quantum confined Stark effect. In addition to applied electric field, an external magnetic field is also used to control the quantum dot exciton properties. In this work we present our findings that sheds light on the symmetry of the confinement potential. The observed extent of valley polarization indicates quantum confined exciton's valley degree of freedom protection from environmental disturbances.

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