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Diamagnetic Exciton Properties in Quantum Dot Molecules FINO PUERTO NELSON RICARDO, RAMIREZ HANZ YECID, Universidad de los Andes, CAMACHO ANGELA S, Profesor, GRUPO DE MATERIA CONDENSADA UNIVERSIDAD DE LOS ANDES TEAM — The magnetic properties of nanostructures like quantum dots and rings are the subject of intense research. In particular, magnetic control of coupled quantum dots (artificial molecules) has become subject of interest. The diamagnetic shift of confined excitons complexes has been used as a measured of the wave function spatial extent in semiconductor nanostructures. In weak magnetic field, the diamagnetic shift is expected to exhibit quadratic dependence. However, for exciton complexes the diamagnetic behavior is expected to exhibit more complicated features related to electron-hole asymmetry effects on Coulomb interactions. In this work we study the magnetic response of neutral and charged excitons in InAs/GaAs asymmetric artificial molecules By using a first order perturbation approach, and within the effective mass approximation, we calculate magnetic field dependent electronic structures of confined excitons and trions in vertically coupled quantum dots. These predicted regions, which show coexistence of crossing and anticrossing exciton states, because of allowing control of charge localization and polarization of emitted photons. .

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