Abstract Submitted
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Stark Effect of Excitons in a Quantum Nano-rod with Parabolic Confinement[1] S.K. LYO, U. California, Irvine, CA — We study the exciton binding energy and the oscillator strength as a function of a DC electric field in a quasi-one-dimensional quantum dot (*i.e.*, nano rod) with parabolic confinements in the conduction and valence bands. The relative importance of the quantum confinement and electron-hole interaction is examined by varying the the linear confinement length (*i.e.*, rod length). We find an abrupt decrease of the oscillator strength, loss of exciton binding energy, and a sudden increase of the root-mean-square average of electron-hole separation as the excitons are dissociated at the threshold field. The field dependence of the effects are also investigated as a function of the rod length and the radius of the nano rod. The numerical results are applied to GaAs and CdSe rods.

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