

Abstract Submitted
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Modeling of tunneling spectroscopy of a single quantum dot involving two levels MING TING KUO, National Central University, YIA-CHUNG CHANG, Academia Sinica — We have employed the two-level Anderson model to simulate the system of the tip/quantum dot (QD)/substrate double barrier junction. The tunneling current through the ground state and the first excited state in the cases of shell-tunneling and shell-filling is theoretically investigated in the framework of nonequilibrium Green's function technique by solving the two level Anderson model properly. We found that single-particle and two-particle occupation numbers significantly influence the probabilities of each resonant energies arising from the intralevel and interlevel Coulomb interactions. Compared with tunneling current spectra of CdSe QDs, we predict some resonant structures which can be observed in an isolated QD.

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