

Abstract Submitted
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Disorder-induced bound states within an adatom-quantum wire system BRADLEY MAGNETTA, GONZALO ORDONEZ, Butler University — Bound states induced by disorder are theoretically observed within a quantum wire and adatom system. The quantum wire is modeled as an array of quantum wells with random energies and exhibits Anderson Localization. By varying the energy of our adatom and adjusting the tunneling strength between the adatom and the quantum wire we observe disorder-induced bound states between the the adatom and its attached point. The characteristics of these disorder-induced bound states are greatly influenced by the site of interest on the quantum wire. Utilizing random quantum wires and disordered superlattices to produce bound states may offer flexibility in fabrication as well as provide grounds for energy transmission in photovoltaics.

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