

Abstract Submitted  
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**Quasibound States and Evidence for a Spin 1 Kondo Effect in Asymmetric Quantum Point Contacts**<sup>1</sup> HAO ZHANG, Duke University, PHILLIP WU, Stanford University, ALBERT CHANG, Duke University — Linear conductance below  $2e^2/h$  shows resonance peaks in highly asymmetric quantum point contacts (QPCs). As the channel length increases, the number of peaks also increases. At the same time, differential conductance exhibits zero bias anomalies (ZBAs) in correspondence with every other peak in the linear conductance. This even odd effect, observable in the longer channels, is consistent with the formation of quasi-localized states within the QPC. In rare cases, triple peaks are observed, indicating the formation of a spin one Kondo effect when the electron filling number is even. Changing the gate voltage tunes this spin triplet to a singlet which exhibits no ZBA. The triple-peak provides the first evidence suggestive of a spin singlet triplet transition in a QPC, and the presence of a ferromagnetic spin interaction between electrons.

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