

Abstract Submitted  
for the 4CF11 Meeting of  
The American Physical Society

**Effective Field Theory of Interacting  $\pi$ -Electrons in Highly-Conductive Molecular Junctions** JOSHUA BARR, University of Arizona, JUSTIN BERGFELD, University of California, Irvine, CHARLES STAFFORD, University of Arizona — We present an effective field theory ( $\pi$ -EFT) that allows the two-body Hamiltonian for a  $\pi$ -electron system to be expressed in terms of three effective parameters: the  $\pi$ -orbital quadrupole moment, the on-site repulsion, and a dielectric constant. As an application of this, we then present a model of screening effects in single-molecule junctions based on the image multipole method, and review our recent application of this to highly-conductive molecular junctions wherein the transmission eigenchannel distribution calculated for an ensemble of Pt-benzene-Pt junctions is in excellent agreement with experiment.

Joshua Barr  
University of Arizona

Date submitted: 16 Sep 2011

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