Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Effective field theory of interacting pi electrons in molecular junctions JOSHUA BARR, JUSTIN BERGFIELD, CHARLES STAFFORD, University of Arizona — We present an effective field theory that allows the two-body Hamiltonian for a π electron system to be expressed in terms of three effective parameters: the π orbital quadrupole moment, the on-site repulsion, and a dielectric constant. As an application of this theory, we present a model of screening in single-molecule junctions based on the image charge method, and use this technique to calculate the van der Waals interaction between a neutral molecule and a metallic conductor.

Charles Stafford
University of Arizona

Date submitted: 19 Nov 2010 Electronic form version 1.4