

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**Spatially dependent Kondo effect in Quantum Corrals**<sup>1</sup> ENRICO ROSSI, DIRK K. MORR, University of Illinois at Chicago, Chicago IL 60607. — We study the Kondo screening of a single magnetic impurity placed inside a quantum corral consisting of non-magnetic impurities on the surface of a metallic host system. We show that the spatial structure of the corral's eigenmodes leads to a spatially dependent Kondo effect whose signatures are experimentally measurable spatial variations of the Kondo temperature,  $T_K$ , and of the critical Kondo coupling,  $J_{cr}$ . Moreover we find that the screening of the magnetic impurity is accompanied by the formation of multiple Kondo resonances with characteristic spatial patterns that provide further experimental signatures of the spatially dependent Kondo effect. Our results demonstrate that quantum corrals provide new possibilities to manipulate and explore the Kondo effect.

<sup>1</sup>We acknowledge financial support from NSF and DOE.

Enrico Rossi  
University of Illinois at Chicago, Chicago IL 60607.

Date submitted: 20 Nov 2006

Electronic form version 1.4