Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

**Polarization Waves around Coulomb Impurities in Strained Graphene** VALERI KOTOV, ANAND SHARMA, University of Vermont, A.H. CASTRO NETO, National University of Singapore — We study the distribution of polarization charge around external Coulomb centers in graphene. We consider uniaxially strained Graphene so that the Dirac cones are anisotropic and there is a preferred direction on the lattice. Under these conditions we find that the polarization charge exhibits oscillations around the impurity with predominant d-wave symmetry for small anisotropy (strain) and also admixture of g-wave as well as higher waves with increasing anisotropy. The total polarization in the ground state is zero. This rich variety of behavior is in stark contrast to the situation in undeformed graphene, where the polarization charge away from the impurity is identically zero. Thus our results could be used for detection of Coulomb impurity physics even in the case of relatively small charge ions as long as there is sufficient Dirac cone anisotropy.

Valeri Kotov
University of Vermont

Date submitted: 09 Nov 2012 Electronic form version 1.4