Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Suspending graphene using a quadrupole ion trap BRUCE KANE, University of Maryland — Creating a technology to suspend, manipulate, and probe an isolated graphene layer in vacuum may have applications ranging from new growth and fabrication strategies to fundamental measurements of these materials when they are completely uncoupled from a substrate. A sufficiently charged piece of graphene will remain flat due to electrostatic repulsion and can be confined using ac electric fields in a quadrupole trap. I will describe a trap built for this purpose which uses a design borrowed from atomic physics that is optimized for easy optical and physical access to the trapped particle [1]. Charged particles are injected into the trap using electrospray emission [2] of graphene suspended in organic solvents[3] and are probed with a 532 nm laser. I will provide details of the trap design and present preliminary data on characterization of the trapped graphene particles.

[1] Maiwald *et al.*, Nature Physics **5**, 551 (2009).
[2] Pearson *et al.*, Phys. Rev. A **73**, 032307 (2006).
[3] Hernandez *et al.*, Nature Nanotechnology **3**, 563 (2008).

Bruce Kane
University of Maryland

Date submitted: 27 Nov 2009 Electronic form version 1.4