Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Spin relaxation for a confined electron in a buried carbon nanotube BRIAN BEZANSON, XUEDONG HU, University at Buffalo — The problem of spin relaxation in carbon nanotube quantum dots has recently been studied in theory [1,2] and experiment [3]. The existing theoretical work [1] focuses on a suspended tube, while many experimental studies are done in nanotubes buried under a dielectric. Here we consider the effect of bulk phonon modes of the substrate and/or dielectric coupled to a buried nanotube and investigate influence of the bulk dispersion and dimensionality on spin relaxation for an electron confined in a carbon nanotube quantum dot.

[1] D. V. Bulaev, B. Trauzettel, D. Loss, Phys. Rev. B 77 235301 (2008).
[2] B. Bezanson and X. Hu, in preparation.
[3] H. O. H. Churchill et al, Phys. Rev. Lett. 102, 166802 (2009)

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Date submitted: 16 Dec 2009 Electronic form version 1.4