Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Rippling of Graphene[1] MARIA MOURA, UT Austin Physics Department , REBECCA THOMPSON-FLAGG, APS PhysicsCentral, MICHAEL MARDER, UT Austin Physics Department — Experiments found that free standing single-layer graphene sheets display ripples (see ref. Meyer et al. Nature 446, 60 2007). Here we show that these ripples can be a consequence of adsorbed molecules sitting on random sites. The adsorbates cause the bonds between the carbon atom to lengthen slightly. Static buckles caused by roughly 20 % coverage of adsorbates are consistent with experimental observations. We explain why this mechanism is more likely to explain ripples than are thermal fluctuations or the Mermin-Wagner theorem (previously invoked).

[1]National Science Foundation DMR 0701373.

Maria Moura
UT Austin Physics Department

Date submitted: 21 Nov 2008 Electronic form version 1.4