

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**A viable geometry for graphene and single-atom crystals from atoms alone** HAMED POUR IMANI, Univ of Arkansas-Fayetteville, ALEJANDRO PACHECO SANJUAN, Universidad del Norte, ZHENGFEI WANG, University of Utah, MIHAJLO VANEVIC, University of Belgrade, SALVADOR BARRAZA-LOPEZ, Univ of Arkansas-Fayetteville — The geometry of a single layer crystals is determined by four invariant parameters from the metric and curvature tensors. We directly study these invariant parameters using a novel framework from atomic positions in terms of angles, areas, vertex and normal vectors from atoms on the lattice for arbitrary elastic regime and atomic conformation, without resorting to differential geometry and continuum elasticity. The results can enable the study the electrical and mechanical properties of atom-thick crystals in a framework complementary to differential geometry and continuum elasticity. [1,2,3] References: 1. “Graphene’s morphology and electronic properties from discrete differential geometry”, Alejandro A. Pacheco Sanjuan, Zhengfei Wang, Hamed Pour Imani, Mihajlo Vanevic and Salvador Barraza-Lopez, Submitted on July 11, 2013. 2. J. V. Sloan et al., Phys. Rev. B 87, 155436 (2013). 3. Barraza-Lopez et al., Solid State Comm 166, 70 (2013).

Hamed Pour Imani  
Univ of Arkansas-Fayetteville

Date submitted: 15 Nov 2013

Electronic form version 1.4