Scattering from localized strain profiles in graphene: effects on conductance

MATTHEW BARR, Harvard University, ERIC HELLER, HELLER GROUP TEAM — Graphene has attracted significant attention for, amongst other properties, its Dirac-like quasiparticles and long coherence length. In the ballistic regime, we theoretically investigate the scattering properties of localized strain profiles. Manipulating strain in graphene has been proposed as a novel method of shaping graphene devices; modulated hopping parameters effectively introduce vector potentials equivalent to pseudomagnetic fields up to 300T [1]. We determine the localized potential and scattering parameters of several such “bubbles”; with this information we calculate the effects on conductance in both valleys of introducing one or many such impurities.