Minimal conductivity of rippled graphene with topological disorder.[1] ALBERTO CORTIJO, MARIA VOZMEDIANO, Instituto de Ciencia de Materiales de Madrid-CSIC — We study the transport properties of a neutral graphene sheet with curved regions induced or stabilized by topological defects. The proposed model gives rise to Dirac fermions in a random magnetic field and a random space dependent Fermi velocity induced by the curvature. This last term leads to singular long range correlated disorder with special characteristics. The Drude minimal conductivity at zero energy is found to be inversely proportional to the density of topological disorder, a signature of diffusive behavior.

Alberto Cortijo
Instituto de Ciencia de Materiales de Madrid-CSIC

Date submitted: 26 Nov 2007   Electronic form version 1.4