**Title**: Sublattice asymmetry of substitutionally doped impurities in graphene

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**Abstract**: Motivated by the recently observed sublattice asymmetry of substitutional nitrogen impurities in CVD grown graphene, we show, in a mathematically transparent manner, that oscillations in the local density of states driven by the presence of substitutional impurities are responsible for breaking the sublattice symmetry. While these oscillations are normally averaged out in the case of randomly dispersed impurities, in graphene they have either the same, or very nearly the same, periodicity as the lattice. As a result, the total interaction energy of randomly distributed impurities embedded in the conduction-electron-filled medium does not vanish and is lowered when their configuration is sublattice-asymmetric. We also identify the presence of a critical concentration of nitrogen above which one should expect the sublattice asymmetry to disappear. This feature is not particular to nitrogen dopants, but should be present in other impurities.