Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

**Kohn-Luttinger superconductivity in graphene** JOSE GONZALEZ, Instituto de Estructura de la Materia, CSIC, Madrid (Spain) — We address the development of superconductivity in graphene when the Fermi level becomes close to one of the Van Hove singularities of the electron system. The different segments of the Fermi line show then an approximate nesting, which enhances unconventional superconducting and magnetic correlations for a dominant repulsive interaction. The origin of the pairing instability lies in the strong anisotropy of the e-e scattering along the Fermi line, leading to a channel with attractive coupling when making the projection of the BCS vertex on the symmetry modes with nontrivial angular dependence. We show that the superconducting instability is particularly strong at the Van Hove singularity in the valence band of graphene, where the critical scale may be pushed up to temperatures larger than 1 K, depending on the ability to tune the Fermi level to the proximity of the singularity.

Jose Gonzalez
Instituto de Estructura de la Materia, CSIC, Madrid (Spain)

Date submitted: 21 Nov 2008 Electronic form version 1.4