

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Theory of Kekule superconductor on graphene's honeycomb lattice**<sup>1</sup> BITAN ROY, IGOR HERBUT, Department of Physics, Simon Fraser University — A spatially non-uniform superconducting state is proposed as a variational ground state on honeycomb lattice, with the chemical potential close to and right at the Dirac point, when the nearest-neighbor attraction is the dominant component of the interaction. This state spontaneously breaks the translational invariance of the underlying lattice into the Kekule pattern of superconducting bond order parameters. Otherwise it is fully gapped, spin triplet, and odd under the exchange of two sublattices. Symmetries of the ground state for a range of nearest-neighbor interaction, the topological excitations of the Kekule superconductor, and its competition with other superconducting orders proposed in literature will also be discussed.

B. Roy and I. F. Herbut, Phys. Rev. B 82, 035429 (2010).

<sup>1</sup>This work has been supported by NSERC Canada.

Bitan Roy  
Department of Physics, Simon Fraser University

Date submitted: 15 Nov 2010

Electronic form version 1.4