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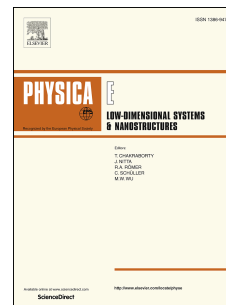
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# Spin susceptibility as a test of unitary limit in disordered graphene systems

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We analyzed the static spin susceptibility of graphene systems in the presence of disorder and a small energy gap. We considered the case of strong scatterers (unitary limit). The temperature and impurity concentration effects were analyzed. The critical value of the impurity concentration was calculated. The behavior of the spin susceptibility for different values of the impurity concentration is discussed.

*Key-words* : Graphene, Disorder, Energy gap, Unitary limit, Critical disorder, Spin susceptibility.

## I. Introduction

Graphene is a monolayer of carbon atoms packed in a two-dimensional lattice which was synthesized about a decade ago [1]. The band structure of graphene has linear dispersions near the two nonequivalent points named as  $K$  and  $K'$ , or Dirac points, of the Brillouin zone. Around the Dirac points, the kinetic energy for a bare electron is linear,  $\varepsilon_{k,\lambda} = \lambda v_F |\vec{k}|$ , where  $\vec{k}$  is the wave vector with respect to the

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