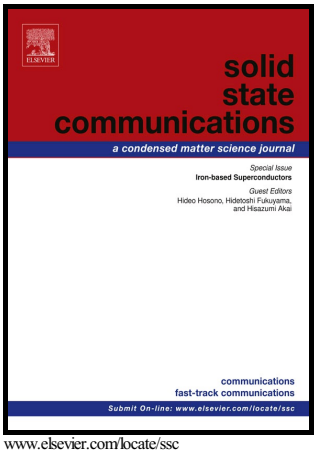

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The electronic properties, electronic heat capacity and magnetic susceptibility of monolayer boron nitride graphene-like structure in the presence of electron-phonon coupling

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Abstract

In this work, we have surveyed the influences of electron-phonon (e-ph) coupling and chemical potential on the boron nitride graphene-like sheet. In particular, by starting the Green's function technique and Holstein model, the electronic density of states (DOS), electronic heat capacity (EHC) and magnetic susceptibility (MS) of this system have been investigated in the context of self-consistent second order perturbation theory which has been implemented to nd the electronic self-energy. Our findings show that the band gap size decreases (increases) with e-ph coupling (chemical potential) parameters. The Schottky anomaly (crossover) decreases in EHC (MS) as soon as e-ph coupling increases. Also, the corresponding temperature with Schottky anomaly is considerably affected by e-ph coupling.

Keywords: *Graphene; Holstein model; Green's function; Density of states; Electronic heat capacity; Magnetic susceptibility*