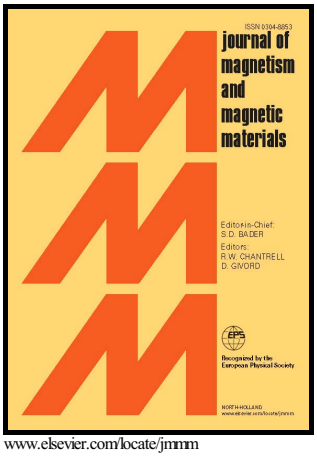

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Magnetic properties of bilayer graphene armchair nanoribbons: A Monte Carlo study

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Abstract:

In this work, the lattice structure of bilayer graphene armchair nanoribbons atoms within the same layer are studied by Monte Carlo simulations. The ground state phase diagrams of mixed spin-3 and spin-7/2 Ising model on a of bilayer graphene armchair nanoribbons are studied using the Monte Carlo simulations. The reduced transition temperatures with the exchange interactions have been given. The total magnetization and magnetic susceptibility with the crystal field have been established for different plane exchange interactions. Finally, we have given the magnetic hysteresis cycle for different plane exchange interactions, different temperatures, and different crystal field in bilayer graphene armchair nanoribbons. The bilayer graphene armchair nanoribbons exhibit the superparamagnetic behavior at the reduced transition temperature and for a fixed of crystal field.

Keywords: Bilayer graphene armchair nanoribbons; Monte Carlo simulations; reduced transition temperature; Magnetic hysteresis cycle; Superparamagnetic behaviour.

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