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Theoretical study of static magnetic properties for the chiral and reconstructed graphene nanoribbons[1] SUK-YOUNG PARK, Department of Physics, Yonsei Univ., JUN-WON RHIM, Korea Institute for Advanced Study, KYUNGSUN MOON, Department of Physics, Yonsei Univ. — Recent theoretical study of the chiral graphene nanoribbons(CGNR) has demonstrated the magnetic ordering of the edge states below a certain chiral angle[1]. Based on the Hubbard model for the CGNR, we study the static properties of the magnetic edge states such as the intra-edge and inter-edge spin stiffness, which are the two crucial parameters to control the thermodynamics of the effective magnetic hamiltonian. For the systematic study of the anti-ferromagnetic inter-edge spin correlations, we calculate the inter-edge spin stiffness as a function of ribbon width and transverse electric field. We also attempt to calculate the electronic and magnetic properties for the other edge geometries such as a reconstructed edge geometry, which has been experimentally confirmed as an edge shape other than zigzag or armchair nanoribbon[2] 1. Oleg V. Yazyev, Rodrigo B. Capaz, and Steven G. Louie, Phys. Rev. B 84, 115406 (2011). 2. Pekka Koskinen, Sami Malola, and Hannu Hakkinen, Phys. Rev. B 80, 073401 (2009).

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