

Abstract Submitted
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Magnetic and electric field effects in trilayer graphene JIE YUAN, CARSTEN HONERKAMP, RWTH - Aachen University, FU-CHUN ZHANG, Department of Physics, Zhejiang University, China , CARSTEN HONERKAMP TEAM, FU-CHUN ZHANG TEAM — A 40meV gap has been observed in trilayer graphene in a recent experiment[1]. We study theoretically a model for graphene trilayer with layer-antiferromagnetic state as the ground state due to on-site Hubbard interaction, employing mean-field and functional renormalization group techniques. The in-plane magnetic field causes a canting of the spins, but the gap decrease turns out to be insufficient to explain the experiment data, even with orbital effects included. The electric field makes the magnetic subbands non-degenerate. Upon doping, the system will develop a non-zero magnetization and become a half-metal. Notably, in the half-metallic state of trilayer graphene, the spin-polarization can be very large. [1].arXiv:1402.6413

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