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Spin and band ferromagnetism in trilayer graphene RALPH VAN GELDEREN, Utrecht University, LIH-KING LIM, LPS Orsay, Université Paris-Sud, CRISTIANE MORAIS SMITH, Utrecht University — We study the ground state properties of an ABA-stacked trilayer graphene. The low energy band structure can be described by a combination of both a linear and a quadratic particle-hole symmetric dispersion, reminiscent of monolayer- and bilayer-graphene, respectively. The multi-band structure offers more channels for instability towards ferromagnetism when the Coulomb interaction is taken into account. Indeed, if one associates a subband-index degree of freedom to the bands (parabolic/linear), it is possible to realize also a band-ferromagnetic state, where there is a shift in the energy bands, since they fill up differently. By using a variational procedure, we compute the exchange energies for all possible variational ground states and identify the parameter space for the occurrence of spin- and band-ferromagnetic instabilities as a function of doping and interaction strength.

Cristiane Morais Smith
Utrecht University

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