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SU(4) quantum Hall skyrmions in graphene in the quarter-filled N=0 Landau level[1] YUNLONG LIAN, MARK-OLIVER GOERBIG, Laboratoire de Physique des Solides CNRS-UMR-8502, France, ACHIM ROSCH, Institute for Theoretical Physics, University of Cologne, Germany, QUANTUMHALL-SKYRMION COLLABORATION — Skyrmions are present in multi-component quantum Hall systems where the splittings of Landau sub-levels are small compared to the Coulomb energy. Using a minimal field theory obtained by a variational approach, we study various types of charge-1 skyrmions in the vicinity of the quarter-filled N=0 Landau level of graphene. We find novel texture states in the spin-pseudospin-entanglement channel, as well as the transitions between phases corresponding to different skyrmion types [1]. Our studies provide references for STM/STS imaging of the textured quantum Hall states in graphene and suggest a refined picture for charge transport in the multi-component quantum Hall systems.
[1] Lian et al., PRL 117,056806(2016)

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