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**Weak-field quantum Hall transition: microscopic verification**[1]
VAGHARSH MKHITARYAN, Department of Physics and Astronomy, University of Utah, VICTOR KAGALOVSKY, Sami Shamoon College of Engineering, Beer Sheva, Israel, MIKHAIL RAIKH, Department of Physics and Astronomy, University of Utah — Levitation scenario: the higher is the Fermi level the lower is the magnetic field at which transition into $\sigma_{xy} = 1$ quantum Hall phase takes place, was put forward by Khmelnitskii more than 25 years ago. It was based on field-theoretical arguments. While zero-field complete localization of 2D electron states even at high energies was confirmed by numerical treatment of the Anderson Hamiltonian, no microscopic description of low-field quantum Hall transition existed so far. We constructed a *weakly-chiral* network model [Phys. Rev. Lett. 103, 066801 (2009)] which, depending on node parameters, captures both the Anderson insulator ($\sigma_{xy} = 0$) phase and the quantum Hall ($\sigma_{xy} = 1$) phase. Numerical analysis of this model, as well as analytical treatment of its classical limit, are in full agreement with each other; they both reveal delocalization transition in non- quantizing magnetic field, where electron trajectories are only slightly curved. At low-field transition, electron states can be viewed as two weakly coupled by disorder Chalker-Coddington networks, with *opposite* chiralities.

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