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Disorder-induced magnetooscillations in bilayer graphene at high bias MIKHAIL RAIKH, VAGHARSH MKHITARYAN, Department of Physics and Astronomy, University of Utah, Salt Lake City, UT 84112, USA — Energy spectrum of biased bilayer graphene near the bottom has a "Mexican-hat"-like shape. For the Fermi level within the Mexican hat we demonstrate that, apart from conventional magnetooscillations which vanish with temperature, there are additional magnetooscillations of capacitance and conductance which are weakly sensitive to temperature. These oscillations are also insensitive to a long-range disorder. Their period in magnetic field scales with bias, V, as V^2. The origin of these oscillations is the disorder-induced scattering between electron-like and hole-like Fermi-surfaces, specific for Mexican hat. At low temperatures, oscillations transform into quantum Hall plateaus in σ_{xy}. We predict that evolution of σ_{xy} with magnetic field is highly non-trivial. This is because the contributions to σ_{xy} from electron-like and hole-like Landau levels have opposite signs.

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