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Floquet spectrum and driven conductance in Dirac materials: Effects of Landau-Zener-Stuckelberg-Majorana interferometry YAROSLAV RODIONOV, KLIMENT KUGEL, Institute for theoretical and applied electrodynamics, FRANCO NORI, Center for Emergent Matter Science, RIKEN — Using the Landau-Zener-Stckelberg-Majorana-type (LZSM) semiclassical approach, we study both graphene and a thin film of a Weyl semimetal subjected to a strong ac electromagnetic field. The spectrum of quasienergies in the Weyl semimetal turns out to be similar to that of a graphene sheet. It has been predicted qualitatively that the transport properties of strongly irradiated graphene oscillate as a function of the radiation intensity [S. V. Syzranov et al., Phys. Rev. B 88, 241112 (2013)]. Here we obtain rigorous quantitative results for a driven linear conductance of graphene and a thin film of a Weyl semimetal. The exact quantitative structure of oscillations exhibits two contributions. The first one is a manifestation of the Ramsauer-Townsend effect, while the second contribution is a consequence of the LZSM interference defining the spectrum of quasienergies.

Yaroslav Rodionov
Institute for theoretical and applied electrodynamics

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