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Coherent photocurrent control in a graphene bilayer in a magnetic field KIRAN RAO, JOHN SIPE, University of Toronto — We consider theoretically the coherent control of a Bernal-stacked graphene bilayer in a perpendicular magnetic field. When the system is exposed to a two-color optical pulse, photocurrents of electrons and holes are induced through interference between one- and two-photon excitation processes. The generated photocurrents are time-dependent as a result of the two processes placing electrons or holes in different Landau levels. The direction and phase of the terahertz current oscillation can be tuned through the polarization and relative phase parameter of the optical pulses. We compare the results to those obtained in the absence of a magnetic field [1] and also to the results for monolayer graphene.

[1] J. Rioux, G. Burkard and J. E. Sipe, Phys. Rev. B 83, 195406 (2011).

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