

Abstract Submitted
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Floquet engineering of twisted double bilayer graphene¹ MARTIN RODRIGUEZ-VEGA, University of Texas at Austin, MICHAEL VOGL, King Fahd University of Petroleum and Minerals, GREG FIETE, Northeastern University — Motivated by the recent experimental realization of twisted double bilayer graphene (TDBG) samples, we study, both analytically and numerically, the effects of circularly polarized light propagating in free space and confined in a waveguide on the band structure and topological properties of these systems. These two complementary Floquet protocols allow us to selectively tune different parameters of the system by varying the intensity and light frequency. Furthermore, we study the topological properties of the driven system in different settings, provide accurate effective Floquet Hamiltonians, and show that relatively strong drives can generate flat bands. Reference Phys. Rev. Research 2, 033494 (2020)

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