

Abstract Submitted  
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**Occupation probabilities and current densities of bulk and edge states of a Floquet topological insulator**<sup>1</sup> HOSSEIN DEHGHANI, ADITI MITRA, New York Univ NYU — Results are presented for the occupation probabilities and current densities of bulk and edge states of half-filled graphene in a cylindrical geometry, and irradiated by a circularly polarized laser. It is assumed that the system is closed, and that the laser has been switched on as a quench. Laser parameters corresponding to some representative topological phases are studied: one where the Chern number of the Floquet bands equals the number of chiral edge modes, a second where anomalous edge states appear in the Floquet Brillouin zone boundaries, and a third where the Chern number is zero, yet topological edge states appear at the center and boundaries of the Floquet Brillouin zone. Qualitative differences are found for the high frequency off-resonant and low frequency on-resonant laser with edge states arising due to resonant processes occupied with a high effective temperature on the one hand, while edge states arising due to off-resonant processes occupied with a low effective temperature on the other. Finally, we study the effects of inversion symmetry and particle-hole symmetry on the net current density and occupation probabilities in a half-filled system.

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