

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Time evolution of wave-packets in topological insulators¹ POLIANA H. PENTEADO, Physics Institute of São Carlos, University of São Paulo, SEBASTIAN DUQUE MESA, University of Antioquia, GERSON J. FERREIRA, J. CARLOS EGUES, Physics Institute of São Carlos, University of São Paulo — Topological insulators (TIs) are a fantastic new class of materials that have gapless helical surface (3D TIs) or edge (2D TIs) states embedded within the bulk gap of its host material. This unique property rises from an interface between materials with topologically inequivalent sets of bands structures, i.e. gaps with different signs. Here we investigate the time-evolution of wave-packets in TIs. Within the Dirac equation, the interference between eigenstates from positive and negative energy bands leads to the relativistic oscillatory behavior well known as Zitterbewegung. It was recently discussed the time evolution of the guiding center of a wave-packet in TIs converging towards the edge states. Here we show a more detailed discussion of the evolution of the full wave-packet and its behavior regarding the collision with the edges of the system.

¹We acknowledge support from the Pró-Reitoria de Pesquisa (PRP/USP) within the Research Support Center Initiative (NAP Q-NANO).

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Date submitted: 15 Nov 2013

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