

Abstract Submitted
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Topological induced valley polarization in bilayer graphene/Boron Nitride¹ LEONARDO BASILE, Escuela Politecnica Nacional, JUAN C IDROBO, Oak Ridge National Laboratory — Novel electronic devices rely in our ability to control internal quantum degrees of freedom of the electron e.g., its spin. The valley number degree of freedom is a pseudospin that labels degenerate eigenstates at local maximum/minimum on the valence/conduction band. Valley polarization, that is, selective electronic localization in a momentum valley and its manipulation can be achieved by means of circular polarized light (CPL) in a system with strong spin-orbit coupling (SOC). In this talk, we will show theoretically that despite the fact that neither graphene or BN have a strong SOC, a bilayer of graphene on BN oriented at a twist angle has different absorption for right- and left- CPL. This induced polarization occurs due to band folding of the electronic bands, i.e., it has a topological origin.

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