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**Topologically-driven valley polarization in twisted graphene/hexagonal boron nitride heterostructures** LEONARDO BASILE, Escuela Politecnica Nacional, JUAN CARLOS IDROBO, Oak Ridge National Laboratory — Valley polarization, that is, selective electronic localization in a momentum valley, has been proposed on materials presenting either a strong spin-orbit coupling (SOC) or with a weak SOC but in the presence of electric and magnetic fields. In this talk, we identify a non-centro symmetric system which can also present valley polarization purely by topological means without the necessity of SOC. We find that twisted bilayers of graphene/hexagonal boron nitride heterostructures have different absorption for right- and left- circular polarized light, indicating valley polarization. This induced polarization occurs due to band folding of the electronic bands, i.e., it has a topological origin.

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