If any of the two talks gets reassigned to a different section, we request they get reassigned together, in the same order (Zachariah Hennigausen et. al first, Gianina Buda et al. immediately after).

Abstract Submitted
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Ab-initio study of heterostructures of vertically stacked and rotationally aligned incommensurate 2D-films[1] GIANINA BUDA, CHRISTOPHER LANE, ZACHARIAH HENNIGHAUSEN, ANTHONY VARGAS, Northeastern University, FANGZE LIU, Los Alamos National Laboratory, ISMAIL BILGIN, DANIEL RUBIN, SWASTIK KAR, ARUN BANSIL, Northeastern University — Heterostructures obtained through vertical stacking of atomically-thin films are expected to provide a new generation of materials platforms for fundamental science investigations as well as applications. We discuss how one Bi_2Se_3 quintuple-layer (QL) deposited on an MoS_2 trilayer (TL) can stack aligned rotationally with long-range crystallographic order, despite the incommensurability of their lattices to form a new type of well-defined *heterocrystal*. Surprisingly, interaction between the Bi_2Se_3 and MoS_2 layers leads to electronic properties of the heterocrystal that are quite distinct from those of the parent films. We discuss our experimental findings in terms of first-principles computations of electronic and spin-structures, as well as charge densities for heterostructures of Bi_2Se_3 stacked layer-by-layer on $MoSe_2$ and WS_2 films.

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