Abstract Submitted
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Cu doping in topological insulator Bi_2Se_3[1] YAOYI LI, SHIVANI RAJPUT, MICHAEL WEINERT, LIAN LI, University of Wisconsin, Milwaukee —
Three-dimensional topological insulators Bi-chalcogenides exhibit spin-momentum locked surface Dirac states that can be tuned by doping. In this work, we grow Bi_2Se_3 films by molecular beam epitaxy, and tune the Dirac state by Cu doping. Using scanning tunneling microscopy, we find that in addition to substitutional incorporation, Cu also intercalates within the van der Waals gap between adjacent quintuple layers. Using scanning tunneling spectroscopy, we further find that Cu doping on the Bi_2Se_3 surface allows the controlled modification of the Dirac point by as much as 200 meV. These results and comparison with first-principles calculations will be discussed at the meeting.

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