

Natural and Artificial Hetero-Structures Involving Topological Insulators

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Topological insulators (TI) and topological crystalline insulators (TCI) are new class of materials predicted to show a variety of unusual phenomena when interfaced with magnetic and superconducting materials, ranging from induced magnetic monopoles, quantum anomalous Hall effect, Majorana and Weyl fermions, etc. Interfacing, however, necessarily induces inhomogeneities on various length-scales that can significantly affect measured global properties and calls for complementary microscopic studies. Here, we present our angle-resolved photoemission spectroscopy studies of natural TI super-lattices and of *in-situ* grown hetero-structures involving interfaces of T(C)Is with magnetic and superconducting materials and correlate observed features with microscopic studies.

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