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Growth and in-situ ultra-high resolution ARPES studies of the Bi-Te family of topological insulators[1] JAMES LEE, FELIX SCHMITT, ROB MOORE, INNA VISHIK, MING YI, Z.X. SHEN, Stanford University — Topological insulators have received intense focus in the condensed matter community due to their academic and technical potential. The Quantum Anomalous Hall state is an example of the exotic physics that could have a major industry impact if it can be realized and controlled. While the topologically protected states live at interfaces between insulators of two topological classes, investigations of the underlying electronic structure via angle resolved photoemission spectroscopy requires pristine surfaces. Here we present results from in situ ultra-high resolution laser ARPES investigations at low temperatures of the doped Bi-Te family of topological insulator thin films grown via molecular beam epitaxy. Electronic structure evolution as a function of dopant, dopant level and thickness will be presented and compared to theoretical predictions.

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