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Surface-to-bulk scattering in topological insulator films KUSH SAHA, ION GARATE, University of Sherbrooke, Sherbrooke, Quebec, Canada — We present a quantitative microscopic theory of the disorder- and phonon-induced coupling between surface and bulk states in topological insulator (TI) films. We find a simple mathematical structure for the surface-to-bulk scattering matrix elements and confirm the importance of bulk-surface coupling in transport and photoemission experiments, assessing its dependence on temperature, carrier density, film thickness and particle-hole asymmetry.

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