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Weak Localization and Antilocalization in Topological Insulator Thin Films with Coherent Bulk-Surface Coupling ION GARATE, LEONID GLAZMAN, Yale University — We evaluate quantum corrections to conductivity in an electrically gated thin film of a three-dimensional (3D) topological insulator (TI). We derive approximate analytical expressions for the low-field magnetoresistance as a function of bulk doping and bulk-surface tunneling rate. Our results reveal parameter regimes for both weak localization and weak antilocalization, and include diffusive Weyl semimetals as a special case.

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