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Bulk Topological Proximity Effect TIMOTHY HSIEH, HIROAKI ISHIZUKA, LEON BALENTS, Kavli Institute for Theoretical Physics, TAYLOR HUGHES, University of Illinois at Urbana-Champaign — Existing proximity effects stem from systems with a local order parameter, such as a local mag- netic moment or a local superconducting pairing amplitude. Here, we demonstrate that despite lacking a local order parameter, topological phases also may give rise to a proximity effect of a distinctively inverted nature. We focus on a general construction in which a topological phase is extensively coupled to a second system, and we argue that in many cases, the inverse topological order will be induced on the second system. To support our arguments, we rigorously establish this "bulk topological proximity effect" for all gapped free fermion topological phases and repre- sentative integrable models of interacting topological phases. We present a terrace construction which illustrates the phenomenological consequences of this proximity effect. Finally, we discuss generalizations beyond our framework, including how intrinsic topological order may also exhibit this effect.

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