Bulk Topological Proximity Effect

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Existing proximity effects stem from systems with a local order parameter, such as a local magnetic moment or a local superconducting pairing amplitude. In this talk, I will demonstrate that despite lacking a local order parameter, topological phases also may give rise to a proximity effect of a distinctively inverted nature. I'll focus on a general construction in which a topological phase is extensively coupled to a second system, and I will argue that in many cases, the inverse topological order will be induced on the second system. To support these arguments, I will rigorously establish this "bulk topological proximity effect" for all gapped free fermion topological phases and representative integrable models of interacting topological phases. After presenting a terrace construction which illustrates the phenomenological consequences of this proximity effect, I will discuss generalizations beyond this framework, including how intrinsic topological order may also exhibit a variant of this effect.