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Title: Surface excitations of 3d Topological Insulators: conformal invariance, self-duality and bosonization

Abstract: Massless fermions and anyons on the surface of (3+1)-dimensional topological insulators can be described at the semiclassical level by a non-local Abelian gauge theory involving two gauge fields. The theory is non-trivial owing to its solitonic excitations with electric and magnetic charges. Upon rewriting it into a local theory in one extra dimension, we compute the partition function and the solitonic spectrum, thus showing conformal invariance and electric-magnetic self-duality. This theory also provides a framework for semiclassical bosonization of (2+1)d fermions.