

Abstract Submitted
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Massless Axions: the Callan-Harvey effect revisited TORU KIKUCHI, AKIHIRO TANAKA, National Institute for Materials Science — Axion-like degrees of freedom appear in the low energy physics of various condensed matter systems, which range from quantum spin systems and superconductors to topological insulators and their variants. When topological defects such as domain walls and vortices are formed by the axion fields, their responses to external fields are dominated by the current inflow from the surrounding bulk (Callan-Harvey effect). However, a dual reformulation due to Izquierdo-Townsend is known to present a controversy regarding the existence of this inflow in the case when axions are massless, and can have important consequences. We revisit this problem and discuss its possible relevance to condensed matters.

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