

Higher-form symmetries and 3-group in axion electrodynamics

Tuesday, 15 December 2020 14:30 (1 hour)

We study higher-form symmetries in a low-energy effective theory of a massless axion coupled with a photon in $(3 + 1)$ dimensions. It is shown that the higher-form symmetries of this system are accompanied by a semistrict 3-group (2-crossed module) structure, which can be found by the correlation functions of symmetry generators of the higher-form symmetries. We argue that the Witten effect and anomalous Hall effect in the axion electrodynamics can be described in terms of 3-group transformations.

Presenter: Dr YOKOKURA, Ryo (KEK)

Session Classification: Invited talks