

Non-invertible duality defect and non-commutative fusion algebra

Thursday, 30 November 2023 14:00 (15 minutes)

We study non-invertible duality symmetries by gauging a diagonal subgroup of a non-anomalous $U(1) \times U(1)$ global symmetry. In particular, we employ the half-space gauging to $c=2$ bosonic torus conformal field theory (CFT) in two dimensions and pure $U(1) \times U(1)$ gauge theory in four dimensions. In $c=2$ bosonic torus CFT, we show that the non-invertible symmetry obtained from the diagonal gauging becomes emergent on an irrational CFT point. We also calculate the fusion rules concerning the duality defect. We find out that the fusion algebra is non-commutative. We also obtain a similar result in pure $U(1) \times U(1)$ gauge theory in four dimensions. This presentation is based on the joint work with Yuta Nagoya [arXiv: 2309.05294, hep-th].

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