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Non-invertible symmetries on the lattice

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Recently, the concept of symmetry has been generalized, and what was not traditionally called symmetry is now being used similarly as symmetry. In this talk, we discuss a class of such generalized symmetries, called non-invertible symmetries, from the viewpoint of the lattice field theories. In particular, we construct topological defects in four-dimensional Z_2 lattice gauge theory, including the Kramers-Wannier-Wegner (KWW) duality defect; the KWW defect is an example of non-invertible symmetries. Also, we consider the system with a boundary and discuss the relations between the disk partition functions derived from the non-invertible symmetry.

Primary author: Prof. YAMAGUCHI, Satoshi (Osaka University)

Presenter: Prof. YAMAGUCHI, Satoshi (Osaka University)

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