Institut Henri Poincaré

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String Theory in Greater Paris

Rencontres Théoriciennes

"Supergravité, théorie des cordes et théorie M"

Vendredi 20 Janvier 2023, 10:00

Fabio Apruzzi

U Padova

Non-invertible symmetries from holography and branes

Generalised non-invertible symmetries have emerged in past year as a new type of symmetry in QFT. This has lead to a new understanding of certain constraints on the low-energy dynamics of QFTs, such as QED, or the standard model. In this talk, I will describe a systematic approach to deriving symmetry generators of Quantum Field Theories from holography. Central to this are the Gauss law constraints in the Hamiltonian quantization of Symmetry Topological Field Theories (SymTFTs), which are obtained from supergravity. Crucially, we realize the symmetry generators from world-volume theories of D-branes in holography. I will particularly focus on non-invertible symmetries, by presenting the application of our proposal in the holographic setup, related to 4d N=1 SU(M) or PSU(M) Super-Yang Mills (SYM). In the brane-picture, the fusion of non-invertible symmetries naturally arises from the Myers effect on D-branes. In addition, the action of the topological non-invertible defects on 't Hooft lines is modelled by the Hanany-Witten effect. For SU and PSU SYM, we also identify the infra-red (IR) 4d field theory from the dual gravity description, which describes the domain-walls and confining/deconfining behaviour in the IR.

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