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On Continuous 2-Category Symmetries and Yang-Mills Theory

Tuesday, 20 December 2022 16:50 (10 minutes)

The last few years have witnessed a paradigm shift concerning the concept of symmetry in QFT, with the focus passing from the action on fields in the Lagrangian to the presence in the theory of special extended operators with the remarkable property of depending only topologically on their support. This led to a broader notion of what we call symmetry in QFT, which encompasses apparently exotic cases such as non-invertible symmetries. In this talk, I will show that such symmetries are not that exotic. I will describe a specific instance of a non-invertible symmetry, which happens to be continuous, and arises in a simple "semi-Abelian" gauge theory. I will describe the (higher) categorical structure of the symmetry and discuss the relation between the semi-Abelian theory and the UV limit of Yang-Mills theories, thus providing physical motivation to investigate such symmetries.
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