TFTs are in the Swampland

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Abstract

One of the recurring themes of recent years is the appearance of deep topological structures in the study of generalized global symmetries of quantum field theories. On the other hand, one expects that in quantum gravity, there are no global symmetries at all! In modern terminology, this is an example of a Swampland Conjecture. In this talk we give a brief overview of these expectations and then present an argument showing that completely decoupled topological quantum field theory (TFT) sectors are incompatible with basic features of holography. In particular, we argue that the fields of any TFT necessarily couple to gravity both non-perturbatively and perturbatively in Newton's constant.

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