

An unconventional approach to the Hierarchy Problem

Friday 19 July 2024 17:30 (15 minutes)

The electroweak hierarchy problem and the naturalness framework have been a driving theme for model building beyond the Standard Model of particle physics. In the case of the Higgs boson, the problem lies in the difficulty of producing a model where the Higgs mass is insensitive to parameters in the ultraviolet (UV) completed theory. With time, more traditional solutions to the hierarchy problem, like supersymmetry or extra dimensions have given room to more daring approaches. We describe a model where the one-loop corrections to the mass of a scalar field cancel exactly, making its UV-insensitivity less severe. This is achieved by introducing a symmetry that generalizes $SU(N)$ by adding fermionic generators. The price to pay, however, is the introduction of degrees of freedom with the wrong spin-statistics, with severe implications for unitarity.

Alternate track

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Yes

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