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Non-supersymmetric heterotic strings: gauge symmetry enhancement and one-loop cosmological constant in toroidal compactifications

Wednesday 5 July 2023 14:30 (30 minutes)

In the absence of experimental evidence for supersymmetry, compactifications of the non-supersymmetric heterotic strings make their reappearance in the landscape of possibly phenomenologically-relevant backgrounds. In this talk we will analyse compactifications on string-size tori, focusing on the phenomenon of gauge symmetry enhancement at special points in moduli space. Concentrating on the circle, we find all the points that have non-Abelian gauge symmetries of maximal rank, and analyze their matter spectrum. We show that all gauge symmetry enhancements, and where they are realised in moduli space, can actually be obtained from an extended Dynkin diagram. Finally, we will present the computation of the cosmological constant at points of maximal enhancement and in their vicinity, as well as its Hessian, finding a surprising result.

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