Probability of Vacuum Stability in Type IIB Multi-Kähler Moduli Models

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We study the probability that all eigenvalues of the moduli mass matrix at extremal points are positive in concrete multi-Kähler moduli models of type IIB string theory compactifications in the large volume regime. Our analysis is motivated by the open question if vacua which are uplifted to de Sitter remain stable. We derive a simple analytical condition for the mass matrix to be positive definite, and estimate the corresponding probability in a supersymmetric moduli stabilization model along the lines of KKLT and a non-supersymmetric Large Volume Scenario type of model, given a reasonable range of compactification parameters. Under identical conditions, the probability for the supersymmetric model is moderately higher than that of the Large Volume Scenario type model.

References:

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