

A Distance Conjecture for Branes

Thursday, 27 June 2024 15:30 (15 minutes)

We use branes to generalize the Distance Conjecture. We conjecture that, in any asymptotic distance ϕ in the moduli space of string vacua of a d -dimensional theory, among the set of particle towers or branes with at most p spacetime dimensions, at least one particle tower or brane becomes exponentially low tension by the formula $T \sim \exp(-\alpha \phi)$ where α is at least $1/\sqrt{d-p-1}$. Since p can vary, this is multiple conjectures in one, and the Sharpened Distance Conjecture is the $p=1$ case. This conjecture is a necessary condition imposed on higher-dimensional theories in order for the Sharpened Distance Conjecture to hold in lower-dimensional theories. We test this proposal in multiple 32 and 16 supercharge examples in diverse dimensions, and see that our conjecture is satisfied and often saturated.

(Based on work with Ben Heidenreich and Tom Rudelius).

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