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Matrix and Geometry in D-Brane Physics

Friday, December 5, 2025 11:40 AM (1 hour)

I will present a unified D-brane viewpoint on how matrix configurations encode noncommutative and commutative geometries. First, I explain how noncommutative D-branes and fuzzy geometries arise from bound states of infinitely many unstable D0-branes, where tachyon dynamics project to a finite set of effective D0-branes. I will also show that in the same way, we can describe ADHM and Nahm constructions in boundary state language. Finally, I present a map from matrices to smooth geometries, which can be viewed as a matrix regularization of brane worldvolumes. Together, these results relate matrix models, noncommutative geometry, and D-brane physics in a single framework.

Presenter: TERASHIMA, Seiji

Session Classification: Session