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## Emergent Cosmology from the BFSS Matrix Model

*Friday, October 1, 2021 3:00 PM (1h 20m)*

The BFSS matrix model is a proposed non-perturbative definition of M-theory in which space is emergent. In this talk, I shall present a new paradigm of early-universe cosmology in the context of the BFSS theory. Specifically, I will show that matrix theory leads to an emergent non-singular cosmology which, at late times, can be described by an expanding phase of Standard Big Bang cosmology. Crucially, the thermal fluctuations in the emergent phase source an approximately scale-invariant spectrum of scalar perturbations and a scale-invariant spectrum of gravitational waves. Hence, this model leads to a successful scenario for the origin of perturbations responsible for the currently observed structure in the universe while providing a consistent UV-complete description.

**Presenter:** BRAHMA, Suddhasattwa (U. Edinburgh)