

# JOINT TUFTS/MIT COSMOLOGY SEMINAR

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## *Emergent Cosmology from Matrix Theory*

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The BFSS (Banks, Fischler, Shenker and Susskind) matrix model is a proposed non-perturbative definition of superstring theory. It is a quantum mechanical model of nine  $N \times N$  Hermitean matrices (no background space). Recent work has shown that in the large  $N$  limit, a continuous space with three large and six small dimensions emerges. We show that thermal fluctuations in a high temperature state of this model yield scale-invariant spectra of cosmological perturbations and gravitational waves. Thus, the BFSS matrix model may yield both emergent space and an emergent early universe phase.

**Tuesday, February 15, 2022, 2:30 pm**

Zoom link will be distributed to joint cosmology seminar mailing list. See <https://cosmos.phy.tufts.edu/mailman/listinfo/cosmology-seminar> to join.

**Tufts University**