

JOINT TUFTS/MIT COSMOLOGY SEMINAR

Detectable GWs from rolling scalars

Evangelos Sfakianakis
UT Austin and Harvard

I will present simple scalar field models that can generate GWs detectable at current and future experiments, including NANOGrav, LISA and CE. Given the proliferation of such models, I will describe correlated observables, including Dark Matter candidates or changes to the relativistic degrees of freedom detectable through the CMB.

In the case of a complex scalar field, the Affleck-Dine mechanism allows for baryogenesis as well as GW production. Intriguingly, this model is highly constrained, both in the particle mass as well as in the GW frequency. Future experiments (CE and ET) will be able to probe this signal, in addition to (model dependent) laboratory searches.

If time permits, I will present a model of hybrid inflation, where preheating produces GWs that have a low enough frequency and large enough amplitude, making them detectable, contrary to previous realizations.

Tuesday, March 4, 2025, 2:30 pm

574 Boston Ave, Room 316

Tufts University

Refreshments at 2:00 outside room 304