

JOINT TUFTS/MIT COSMOLOGY SEMINAR

Treating the ills of the standard model by finite total mass

Louis Clavelli

Univ. of Alabama and Tufts

In addition to several philosophical problems, the standard homogeneous cosmology has many serious physical problems such as violation of the Bekenstein entropy bound, the baryon asymmetry, hyperinflation, the Lithium problem, and the overmassive galaxies in the early universe (Webb events). To treat these problems we expand on a previously proposed model where the density of the universe is a spatial delta function at $t = 0$, decreasing at large distances fast enough to provide a finite mass universe. We treat the model in terms of a spherically symmetric “quasi-Schwarzschild metric” that reduces to the Schwarzschild metric and to the standard cosmology in appropriate limits but that still allows for an expanding universe with finite mass and a delta function big bang singularity. Einstein’s equations then imply at early times a “black shell” region between two radii $r_1(t)$ and $r_2(t)$ where the metric elements g_{11} and g_{44} are sign reversed relative to normal space time. The model suggests an enhanced transition to exact supersymmetry in dense regions of the early universe.

Tuesday, April 1, 2025, 2:30 pm

574 Boston Ave, Room 316

Tufts University

Refreshments at 2:00 outside the building, at the corner of
Harvard St. and Boston Ave.