

JOINT TUFTS/MIT COSMOLOGY SEMINAR

Probability Distributions for Quantum Stress Tensor Fluctuations

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This talk will present some recent results for the probability distribution which describes fluctuations of a time-averaged quantum stress tensor operator, such as the electromagnetic energy density, in the Minkowski vacuum state. The distribution is highly skewed, and hence non-Gaussian, with a sharp lower bound. However, it has no upper bound, but rather a tail which decays as an exponential of the one-third power of the energy density. This tail has several physical implications, including domination of vacuum fluctuations over thermal fluctuations, and enhanced estimates for the rates of black hole and Boltzmann brain nucleation. The effects of stress tensor fluctuations on density and tensor perturbations in inflationary cosmology will also be discussed.

Tuesday, February 26, 2013, 2:30 pm

Cosman Seminar Room

Center for Theoretical Physics

Building 6C, Room 6C-442

Massachusetts Institute of Technology