

JOINT TUFTS/MIT COSMOLOGY SEMINAR

A lower bound on the value of the cosmological constant

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The nature and origin of the energy density components in the universe remains an unsolved problem. While we know the universe is made of baryons, dark matter and dark energy, none of these components is understood (the baryons themselves should not be here as the matter-antimatter asymmetry problem has not been solved). The dark energy problem is particularly intriguing as from quantum field theory argumentations one would expect this component to be zero or have vanished by now. In this talk, I will explore the role that cosmic explosions (from GRBs) play at erasing complex life in our own galaxy and the universe. Surprisingly, I will show that complex life preservation is favoured by the presence of a cosmological constant or cosmic acceleration term; this implies that the probability of having intelligent observers in our universe is favoured by the presence of a cosmological constant. If we interpret this result as a probability distribution function, it implies that we live in the most favorable kind of universe to preserve complex life. I will conclude by discussing this result critically.

Tuesday, October 27, 2015, 2:30 pm
574 Boston Ave, Room 204
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Refreshments at 2:00 outside room 304