JOINT TUFTS/MIT COSMOLOGY SEMINAR

Discovering New Physics Beyond the Standard Model with Cosmological Data Sets

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Cosmological observations have provided us with answers to age-old questions, involving the age, geometry, and composition of the universe. However, there are profound questions that still remain unanswered. I will describe ongoing efforts to shed light on some of these questions. In the first part of this talk, I will explain how we can use measurements of the CMB and the large-scale structure of the universe to reconstruct the detailed physics of much earlier epochs, when the universe was only a tiny fraction of a second old. In particular, I will show how we can probe the shape of the inflationary potential, extra degrees of freedom during inflation, and the signature of possible particles with mass and spin during this period. In the last part of the talk, I will discuss how we can use observations at large scales and sub-galactic scales (through strong gravitational lensing) to improve our understanding of another open question in fundamental physics: the particle nature of dark matter.

Tuesday, November 21, 2017, 2:30 pm

Cosman Seminar Room

Center for Theoretical Physics

Building 6C, Room 6C-442

Massachusetts Institute of Technology

Refreshments at 2:00 in the same room