

JOINT TUFTS/MIT COSMOLOGY SEMINAR

The Static Quantum Multiverse and Emergent Time in Our Universe

Yasunori Nomura
Berkeley

The discovery of the accelerating universe has led to the dramatic new view that our universe may be one of the many universes in which low energy physical laws take different forms: the multiverse. This, however, also leads to the difficult problem of defining probabilities in infinitely large spacetime, called the measure problem. I describe how quantum mechanics plays a crucial role in understanding the multiverse, even at the largest distance scales, and present an explicit framework that allows us to treat the multiverse in a consistent, fully quantum mechanical manner. The resulting picture leads to a revolutionary change of our view of spacetime and gravity, and provides complete unification of the eternally inflating multiverse and many worlds in quantum mechanics. I also discuss how the picture of the multiverse being in a static quantum state arises by pursuing the framework, and how time can emerge in our universe in that picture. The talk is based on a series of work presented in 1104.2324, 1107.3556, 1110.4630, and 1205.5550.

Tuesday, November 6, 2012, 2:30 pm
Cosman Seminar Room
Center for Theoretical Physics
Building 6C, Room 6C-442