JOINT TUFTS/MIT COSMOLOGY SEMINAR

The VECRO hypothesis

Samir Mathur
Ohio State

While the information paradox has received much attention as a constraint on quantum gravity, an equally deep puzzle is presented by the 'bags of gold' problem: if we assume that no large quantum gravity effects arise in gently curved spacetime, then an arbitrarily large entropy can be stored inside the black hole. Such an unbounded entropy would conflict with what we have learnt about black holes from string theory as well as with the conjecture of AdS/CFT duality in its basic form. We will review this puzzle, and then give a picture of the quantum gravity vacuum which resolves both the information paradox and the problem of unbounded entropy. In this picture the vacuum has fluctuations of virtual fuzzball states of all sizes, with the large energy of these fluctuations countered by their large degeneracy. This resolution also opens up a role for quantum gravity effects at the cosmological horizon.

Tuesday, March 10, 2020, 2:30 pm
574 Boston Ave, Room 316
Tufts University

Refreshments at 2:00 outside room 304