

Theory Seminar

Monday, December 7, 2009 2:10 PM 831 Pupin Hall

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Modifying gravity in the Infra Red by imposing an "ultra-strong" equivalence principle

I will give account of a recent attempt to modify the metric-manifold structure of GR in the infra-red. The proposed modification does not contain any adjustable parameter as it is effective at length scales comparable with the inverse curvature. The guiding line for this modification is a recently proposed "ultra-strong" version of the equivalence principle, according to which the vacuum expectation value of the (bare) energy momentum tensor is exactly the same as in flat space: constant everywhere and quartically divergent with the cut-off. Such a simple assumption seems to ease some difficulties of the standard low energy framework for gravity, such as the cosmological constant problem and the black hole information paradox. I will show that the proposed modification, when applied to a matter dominated universe, goes in the direction of a positive acceleration, but it is too mild to explain the observed amount of acceleration.

