

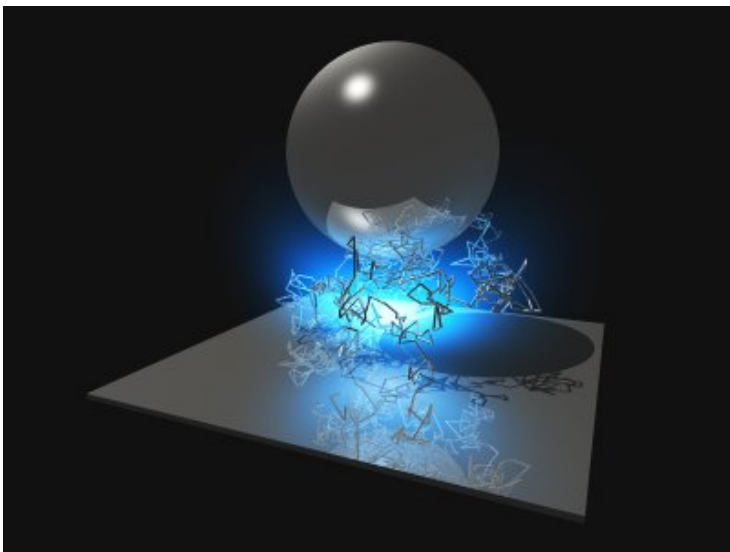
# LEPP JOURNAL CLUB

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## Scrutinizing the Cosmological Constant Problem (and a Proposal)

We give a pedagogical introduction to the standard formulation of the Cosmological Constant Problem, carefully scrutinizing the basic assumptions. We argue that the problem is not well-defined due to the arbitrariness of the zero point of energy in Quantum Mechanics. We propose a principle that fixes this ambiguity by requiring empty Minkowski space to be stable. This leads to a calculation of vacuum energy in a cosmological background that depends on time derivatives of the scale factor, and is of the right order of magnitude. A self-consistent solution to the back-reaction of this vacuum energy on the geometry in the presence of matter is completely consistent with current astrophysical observations. A different choice of vacuum may be relevant to inflation.



**Friday**  
**March 29, 4:00pm**  
301 Physical Sciences Building  
(Refreshments, 3:45pm)