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Setting the Scale of Dimensional Reduction in Causal Dynamical Triangulations JOSHUA COOPERMAN, Department of Physics, University of California, Davis — Within the causal dynamical triangulations approach to quantization of gravity, striking evidence has emerged that the effective dimensionality of spacetime dynamically reduces at small scales. Specifically, in the case of topological sphericity, the expectation value of the spectral dimension decreases with the scale being probed from the topological value of four to an apparent value of two. Thus far the physical scale at which this dynamical dimensional reduction occurs has not been ascertained. In this talk I present the first determinations of this scale. By fitting the expectation value of the spacetime geometry to a classical minisuperspace model, I extract the triangulation lattice spacing in units of the Planck length and the effective cosmological constant in units of the inverse Planck length squared. The former value allows me to establish directly the scales probed by the random walk that defines the spectral dimension. The latter value allows me to establish indirectly these scales via the heat trace for the minisuperspace geometry. This work also yields preliminary indications of the flow of the cosmological constant within this model of quantum geometry.

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