

# *Observing the Holographic Nature of Quantum Spacetime*

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The measurement of holographic noise offers the potential to make a major step forward in the understanding of how the laws of general relativity and quantum mechanics may unify at the Planck scale. Fermi National Laboratory's Holometer experiment utilizes two nested Michelson interferometers to attempt to measure an interference pattern in a recombined monochromatic beam resulting from a new transverse uncertainty in quantum position predicted by the theory of holographic noise. The signals from these two interferometers will be dually analyzed under spectral analysis in an attempt to isolate a non-filterable background noise. The isolation of this fundamental noise will confirm the random walk transverse jittering effects in measurements predicted by holographic noise theory, and mark a support for validity of the existence of the holographic principle. If this noise can in fact be measured it will mark a first real understanding of how a classical spacetime structure emerges at the quantum level, as well as act for the first experimental support for the holographic principle.