

General Relativity and Quantum Cosmology

Holographic Quantum Foam

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(Submitted on 3 Jan 2010)

Due to quantum fluctuations, probed at small scales, spacetime is very complicated -- something akin in complexity to a turbulent froth which the late John Wheeler dubbed quantum foam, aka spacetime foam. Our recent work suggests that (1) we may be close to being able to detect quantum foam with extragalactic sources once the Very Large Telescope Interferometers (VLTi) are fully operational; (2) dark energy is arguably a cosmological manifestation of quantum foam, the constituents of which obey infinite statistics; (3) in the gravitational context, turbulence is closely related to holographic quantum foam, partly validating Wheeler's picture of a turbulent spacetime.

Comments: 5 pages, 1 figure, talk given at MG12 (Paris, July 2009), Loops 09 (Beijing, August 09), and OCPA 6 (Lanzhou, China, August 09)

Subjects: **General Relativity and Quantum Cosmology (gr-qc)**; Cosmology and Extragalactic Astrophysics (astro-ph.CO); High Energy Physics - Theory (hep-th)

Cite as: **arXiv:1001.0411v1 [gr-qc]**

Submission history

From: Y. Jack Ng [[view email](#)]

[v1] Sun, 3 Jan 2010 21:23:38 GMT (29kb)

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