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Quantum-gravity effects for Icecube neutrinos

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The hunt for neutrinos from Gamma-Ray Bursts (GRBs) could also be significant in quantum-gravity research, since they are ideal probes of the microscopic fabric of spacetime. One of the most studied candidate effects of quantum gravity is in-vacuo dispersion, an energy-dependent correction to the speed of ultrarelativistic particles, and in a recent studywe investigated the hypothesis that some neutrinos detected by the IceCube observatory might be GRB neutrinos, with their travel times affected by in-vacuo dispersion.
We adopted a statistical approach seeking to establish that at least some IceCube neutrinos are GRB neutrinos, finding that the presently available data, while insufficient for drawing any conclusions, are encouraging for in-vacuo dispersion.

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