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Hint of CPT Violation in Short-Baseline Electron Neutrino Disappearance

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We analyzed the electron neutrino data of the Gallium radioactive source experiments and the electron antineutrino data of the reactor Bugey and Chooz experiments in terms of neutrino oscillations allowing for a CPT-violating difference of the squared-masses and mixings of neutrinos and antineutrinos. We found that the discrepancy between the disappearance of electron neutrinos indicated by the data of the Gallium radioactive source experiments and the limits on the disappearance of electron antineutrinos given by the data of reactor experiments reveal a positive CPT-violating asymmetry of the effective neutrino and antineutrino mixing angles (with a statistical significance of about 3.5 sigma), whereas the squared-mass asymmetry is practically not bounded.

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