Joint DESY and University of Hamburg Accelerator Physics Seminar

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ZOOM video seminar (needs version 5.0+)

From Beam Diagnostics to Cosmology:
Explaining the Universe with Gravitation Dependent Quantum Vacuum

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Abstract

The LEP machine at CERN was the first accelerator to record an equivalence principle violating gravity. Later on, using the same laser Compton scattering, i.e. electron–photon colliding technique, signs of a gravitational violation of the discrete symmetries have been found in HERA (DESY) and SLC (SLAC) beam–diagnostic data. The observed asymmetric gravity points to an effective vacuum polarization in gravitational fields. This will change the properties of the vacuum, altering the magnitudes of the physical constants. Here I discuss how a variable Planck constant and speed of light, modified by gravity, can explain the main cosmological observations without invoking the expansion of space. The results suggest a simplified Universe without the Big Bang, Dark Energy, or Dark Matter, pointing to a gravitationally excited quantum vacuum as the source of the Cosmic Microwave Background.

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