

PAUL SCHERRER INSTITUT



Particle Theory Seminar

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“Lorentz symmetry breaking: phenomenology and experiments”

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Abstract:

Lorentz symmetry is a cornerstone of modern physics. As the spacetime symmetry of special relativity, Lorentz invariance is a basic component of the standard model of particle physics and general relativity, which to date constitute our most successful descriptions of nature. Deviations from exact symmetry would radically change our view of the universe and current experiments allow us to test the validity of this assumption. In this talk, I will review the fundamentals of Lorentz symmetry breaking and describe the effects of Lorentz violation in different physical systems ranging from low-energy nuclear physics to high-energy astrophysical neutrinos and photons. I will also present the worldwide program on experimental searches for signals of the violation of Lorentz invariance.