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CLUSTER OF EXCELLENCE
QUANTUM UNIVERSE



Quantum Universe Lectures

Joshua Ruderman (New York/DESY)

“New Physics at the Soft Photon Frontier”

5 and 12 February 2021 at 14.30h

Zoom:

<https://uni-hamburg.zoom.us/j/92293543262>

(Meeting ID: 922 9354 3262, Passcode: 97540703)

Abstract:

It is well known that high energy observables in astrophysics and cosmology are sensitive probes of new particle physics. Examples include energetic gamma rays, cosmic rays, and neutrinos. In these lectures I will take the opposite approach, and highlight opportunities for particle physics in the emerging “Soft Photon Frontier” of astrophysics and cosmology. New particle physics can manifest in measurements of the Rayleigh-Jeans tail of the Cosmic Microwave Background, the extragalactic radio background, and cosmological 21cm absorption. In these lectures, I will introduce these soft photon observables and their current experimental status (including several unexplained anomalies). As an example of the sensitivity of these observables to new physics, I will show how oscillations between ordinary photons and dark photons can be tested at the Soft Photon Frontier.
