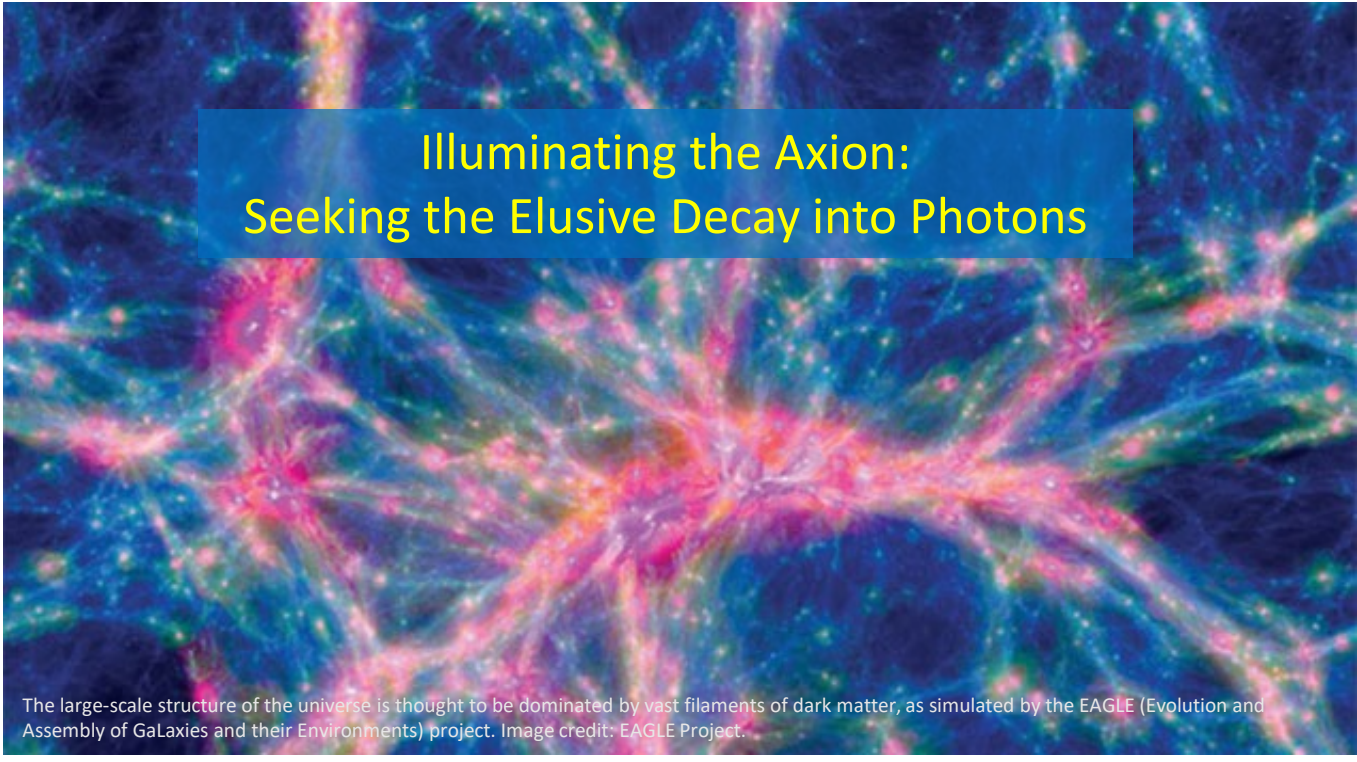
Illuminating the Axion: Seeking the Elusive Decay into Photons



The large-scale structure of the universe is thought to be dominated by vast filaments of dark matter, as simulated by the EAGLE (Evolution and Assembly of GaLaxies and their Environments) project. Image credit: EAGLE Project.

Lecturer: Elisa Todarello , research scientist at Università de Torino and Istituto Nazionale di Fisica Nucleare (INFN), visiting CAPA this week.

Abstract: Axions and axion-like particles couple to photons through a distinctive two-photon vertex. This coupling allows for axion-photon conversion in an external magnetic field, a phenomenon at the base of a variety of current axion searches. Additionally, due to the same vertex, axions can decay into two photons. In this talk, I will show how we can search for axion dark matter by looking for excess radiation resulting from axion decay within a narrow frequency band centered around half the unknown axion mass m. Depending on the value of m, the decay process is dominated by either spontaneous or stimulated decay, requiring corresponding adjustments in the search strategy.

Viernes 17 de noviembre, 11 horas, seminario de Física Nuclear

On-line

CAPA Centro de Astropartículas y Física de Altas Energías

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