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X17 –or the Search for New Physics in Nuclear Transitions

Wednesday 11 June 2025 17:15 (30 minutes)

Rare nuclear transitions are well suited to explore weakly-coupled New Physics and portals into the dark sector at the MeV-scale. In this talk the so-called X-17 Anomaly will be discussed, which is a significant discrepancy reported by the ATOMKI collaboration in the observation of decays of excited ^8Be , ^4He and ^{12}C nuclei to their ground states via internal e^+e^- pair creation. The anomaly, which appears in the angular distribution of the e^+e^- pairs, can be explained by the emission of a neutral boson with a mass of about 17 MeV/c², decaying into e^+e^- . The ATOMKI results and their interpretations are discussed, as well as the status of follow-up experiments, among which an ongoing project at the Montreal Van de Graaff accelerator facility.

Keyword-1

Rare nucl. transitions

Keyword-2

X17 - New Physics ?

Keyword-3

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