

Abstract ID : 64

Assessing Spectral Shape of Forbidden Beta Decays with ACCESS and ASSOLO

Content

The ACCESS/ASSOLO project aims to establish a novel technique for precision measurements of forbidden β -decays, serving as essential benchmarks for nuclear physics calculations and addressing significant backgrounds in astroparticle physics experiments. By operating a pilot array of cryogenic calorimeters based on natural and doped crystals containing β -emitting radionuclides, ACCESS simultaneously measures both natural isotopes (e.g., ^{113}Cd and ^{115}In) and synthetic isotopes (e.g., ^{99}Tc) using a unified experimental approach.

Recently, ACCESS achieved a significant milestone by simultaneously measuring the half-life and spectral shape of the fourth-forbidden β -decay of ^{115}In . Utilizing a cryogenic calorimeter based on an indium iodide (InI) crystal, the study accurately determined the spectral shape and half-life of ^{115}In . The results, interpreted through the interacting shell model, indicate a half-life of $(5.26 \pm 0.06) \times 10^{14}$ yr, providing critical data to enhance nuclear theory calculations.

In this contribution, these results and the next steps of the project will be presented.

Primary author: Dr PAGNANINI, Lorenzo (Gran Sasso Science Institute & INFN - LNGS)

Presenter: Dr PAGNANINI, Lorenzo (Gran Sasso Science Institute & INFN - LNGS)

Status: SUBMITTED

Submitted by **Dr PAGNANINI, Lorenzo** on **Tuesday, 18 March 2025**