

BINGO: Investigation of the Majorana nature of neutrinos at the few meV level of the neutrino mass scale

martedì 18 giugno 2024 17:30 (2 ore)

BINGO is a project dedicated to explore and demonstrate new methods for background reduction in cryogenic calorimetric $0\nu\beta\beta$ searches. With a target background index at the level of 10^{-5} counts/(keV kg yr) it aims at providing a path towards a nearly background free $0\nu\beta\beta$ experiment with a tonne of the isotopes of interest ^{100}Mo and ^{130}Te . The major design aspects to achieve this goal are (i) a novel detector assembly reducing the exposed surface area of un-instrumented (passive) materials in the detector array by more than an order of magnitude, (ii) an additional tightly packed array of BGO scintillators that surrounds the detector array and acts as active cryogenic veto system and (iii) the use of enhanced Neganov-Trofimov-Luke based light detectors that help mitigate the pile-up background for ^{100}Mo and ensure the alpha-beta discrimination in $^{130}\text{TeO}_2$. In this poster we will describe the technical design of these concepts, results from prototypes of the technologies in proof-of concept measurements and initial Geant4 based projections of the impact of these improvements in a CUORE/CUPID size experiment.

Poster prize

No

Given name

Surname

First affiliation

Second affiliation

Institutional email

Gender

Male

Collaboration (if any)

BINGO

Autori principali: SCHMIDT, Benjamin (CEA/IRFU/DPHP); KHALIFE, Hawraa

Relatore: SCHMIDT, Benjamin (CEA/IRFU/DPHP)

Classifica Sessioni: Poster session and reception 1

Classificazione della track: Neutrinoless Double Beta Decay