Contribution ID: **154** Type: **Poster**

Performance Validation of the VSTT: An Upgraded CUPID Prototype Tower with Neganov-Luke Enhanced Light Detectors

Wednesday 27 August 2025 18:00 (2 hours)

The CUPID collaboration is advancing toward a next-generation cryogenic bolometric experiment for neutrinoless double beta decay searches, based on ^{100}Mo-enriched scintillating crystals.
Building on the experience of the first prototype (GDPT), a new upgraded tower has been developed. The Vertical Slice Tower Test (VSTT) features an upgraded mechanical structure designed to improve the uniformity of thermalization across the array and to suppress correlated noise among the light detectors (LDs).
The VSTT employs LDs equipped with Neganov-Luke amplification to significantly boost light signal sensitivity. This advancement is crucial for enhancing the rejection of $2\nu\beta\beta$ pileup events—a major challenge for CUPID due to the high decay rate of ^{100}Mo and the intrinsically slow thermal response of the calorimetric detectors.
The tower will be operated in the CUPID wet cryostat at LNGS Hall A and instrumented with optical fibers, dedicated thermometry, and vibrational sensors. These systems will enable a full characterization of thermal behavior, optical performance, and vibrational noise.
The VSTT results will be pivotal in validating the technological solutions for the final CUPID detector design.

Collaboration you are representing

CUPID

Author: NUTINI, Irene (Istituto Nazionale di Fisica Nucleare - Milano Bicocca)

Presenter: NUTINI, Irene (Istituto Nazionale di Fisica Nucleare - Milano Bicocca)

Session Classification: Poster session

Track Classification: Neutrino Physics and Astrophysics