



Contribution ID: 440

Type: **Parallel talk**

## **PTOLEMY: Relic neutrino direct detection**

*Monday 28 August 2023 15:15 (15 minutes)*

Though their imprint upon the CMB and large-scale structure of the universe remains to this day, Big Bang relic neutrinos (the  $\text{C}\nu\text{B}$ ) have never been directly observed. This remains an outstanding test of the Standard Model in  $\Lambda\text{CDM}$  cosmology and would provide the earliest picture of the universe at only 1 second after the Big Bang. PTOLEMY aims to make the first direct observation of the  $\text{C}\nu\text{B}$  by resolving the  $\beta$ -decay endpoint of atomic tritium. The concept relies upon amassing a target of atomic tritium, developing RF-based trigger and tracking, an EM transverse drift filter, and a cryogenic micro-calorimeter - each of which present novel R&D challenges. A prototype will soon be based at LNGS. Intermediate measurements will be made of the lowest neutrino mass ahead of  $\text{C}\nu\text{B}$  physics runs set to begin in the 2030s.

### **Submitted on behalf of a Collaboration?**

No

**Author:** MEAD, James (University of Amsterdam)

**Presenter:** MEAD, James (University of Amsterdam)

**Session Classification:** Neutrino and Cosmology

**Track Classification:** Neutrino physics and astrophysics