



Contribution ID: 42

Type: not specified

PTOLEMY: resolving relics from the early universe

Tuesday, 4 July 2023 15:00 (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 ΛCDM cosmology and, carrying a signal from only one second after the Big Bang, relies upon messengers predating any previously observed. PTOLEMY aims to make the first direct observation of the $\text{C}\nu\text{B}$ by resolving the β -decay endpoint of atomic tritium to $\text{O}(10\text{meV})$ precision. If achieved, this first observation would also reap at least the lowest neutrino mass. The project is in its prototyping phase and looks to begin physics runs in the 2030s.

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