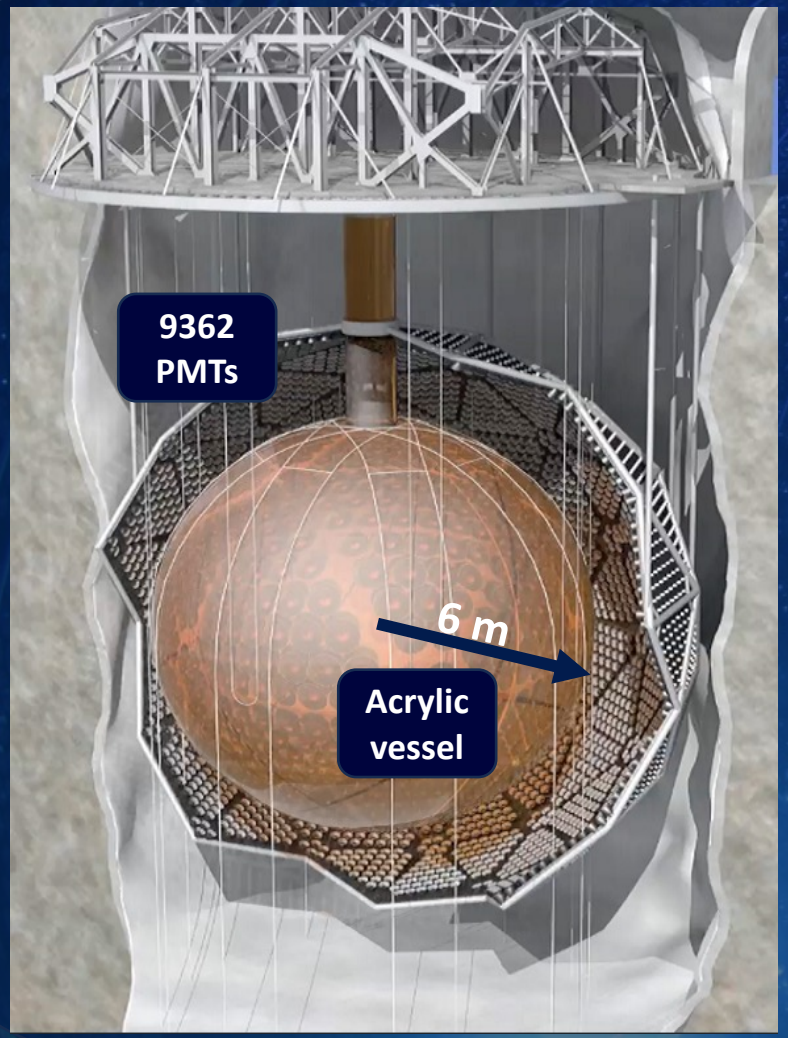
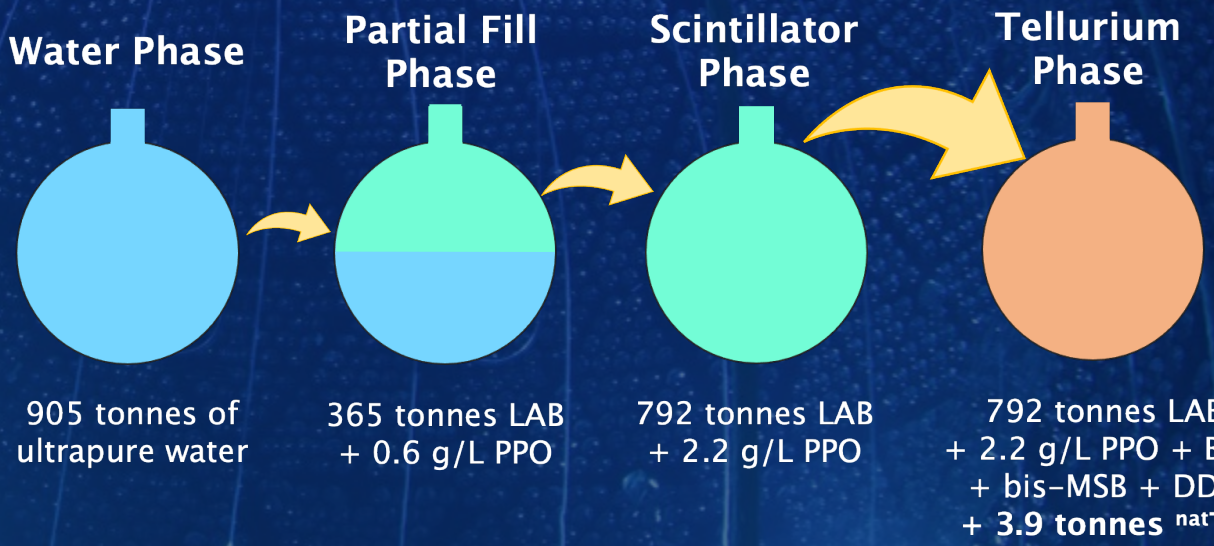
The SNO+ Experiment



- Multi-purpose neutrino detector 2 km underground at SNOLAB
  - Extensive physics programme in all phases

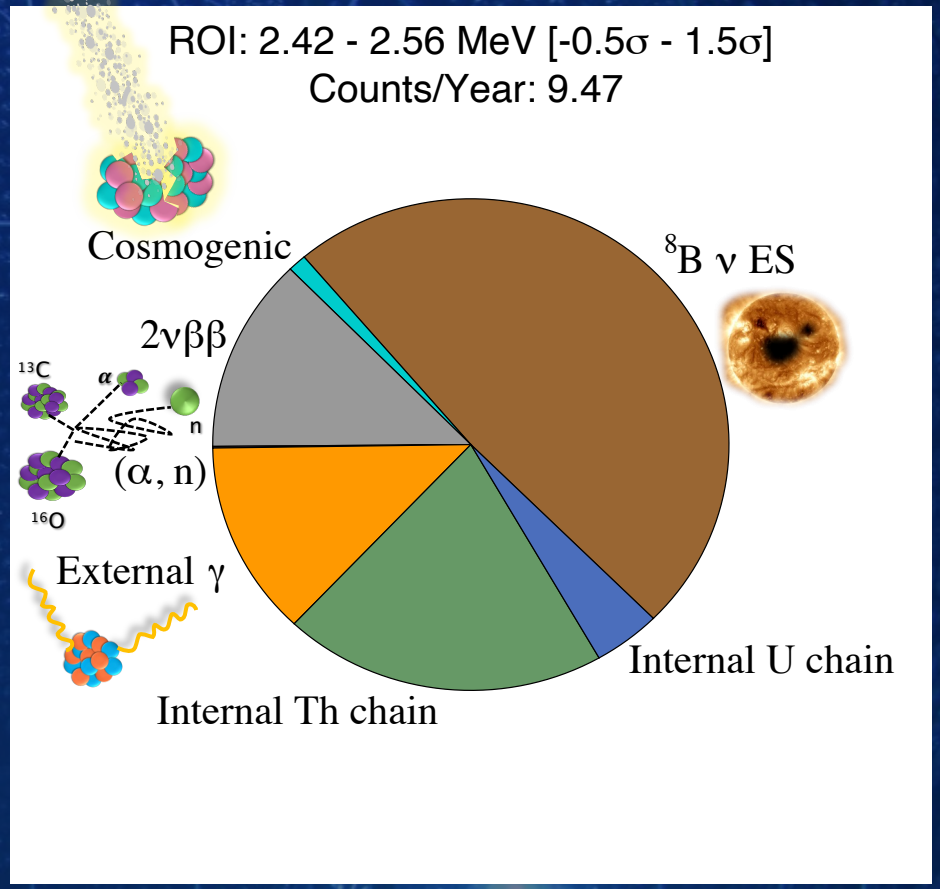


  - Main goal: search for 0νββ of ^{130}Te!

Searching for 0νββ of 130Te

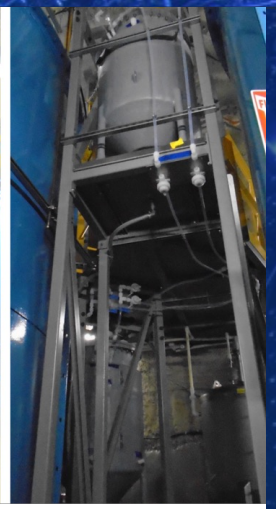
- Q-Value = 2.53 MeV
- Natural abundance of 34.1%
- Novel technique developed to load Te in LAB
- Initial deployment of **1.3 tonnes of ^{130}Te** (2025)

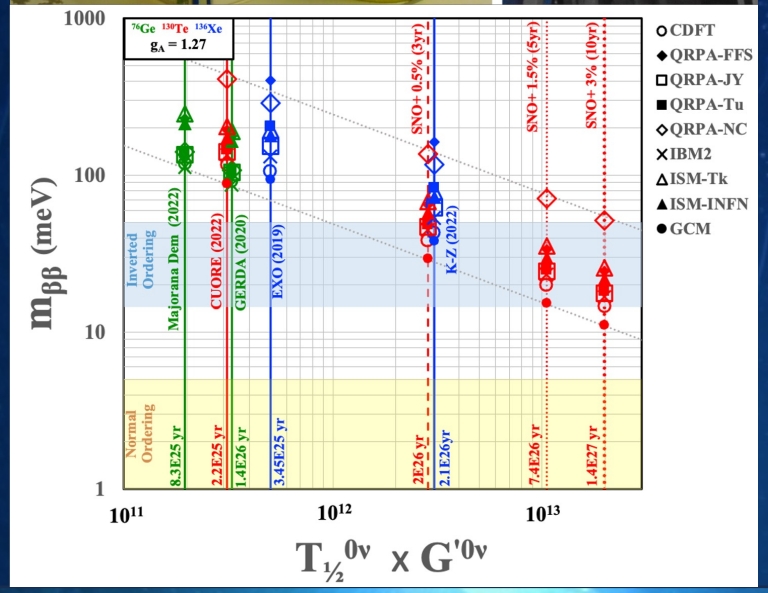
- Maximising 0νββ half-life sensitivity requires:
  - Large isotope **mass**
  - Accurate knowledge of **backgrounds**
  - Calibrated model of **detector response**



Ana Sofia Inácio, William Parker, Benjamin Tam on behalf of the SNO+ Collaboration; NuPhys2023: Prospects in Neutrino Physics, London, Dec 18-20, 2023

Current Status of the 0νββ Search





- Tellurium purification and loading systems all constructed and in late stages of commissioning
- Study of scintillator backgrounds prior to tellurium addition underway
- Initial loading of 0.5% by mass
  - Projected sensitivity of 2 x 10^{26} years after 3 years live time
- Final Sensitivity will depend on purity achieved during tellurium loading
- Further loading of up to 3% by mass possible and planned