



ANTINEUTRINOS AND SNO+

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Brief Introduction to SNO+

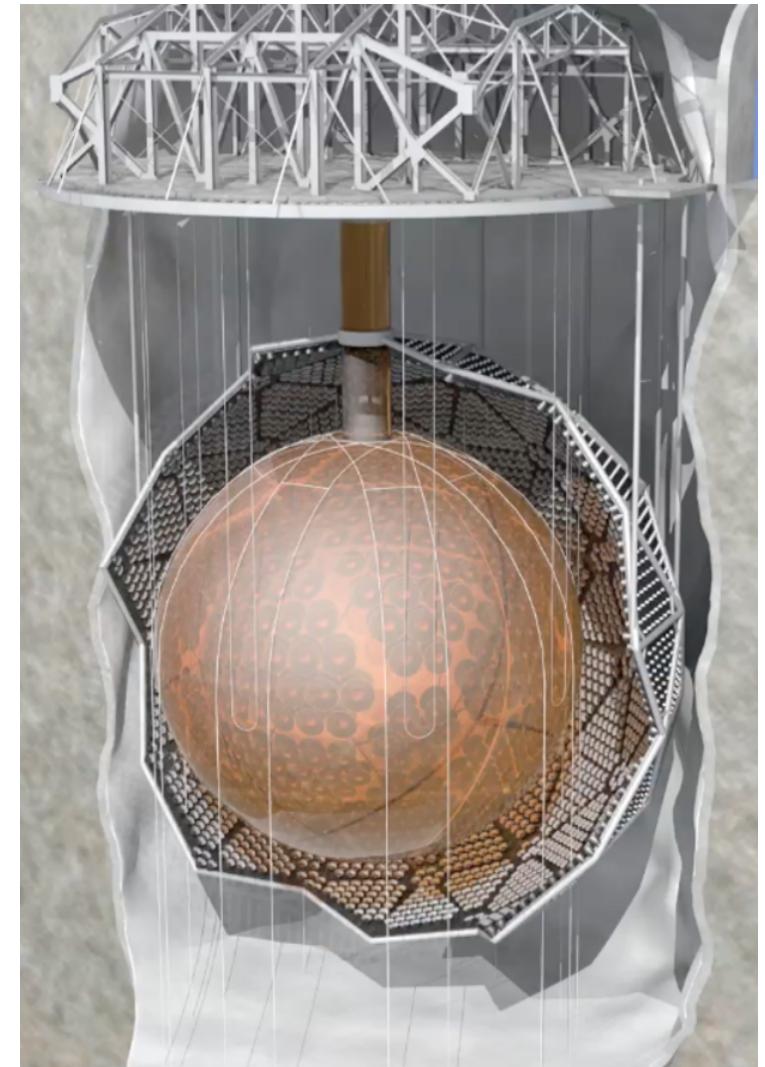
Located in Vale's Creighton mine in Sudbury, Canada.

Objectives:

- Search for neutrinoless double beta decay of ^{130}Te (main objective)
- Supernova neutrinos/antineutrinos
- **Reactor antineutrinos**
- etc.

Structure:

- Acrylic vessel (AV)
- Detectors sphere, with 9300 PMTs

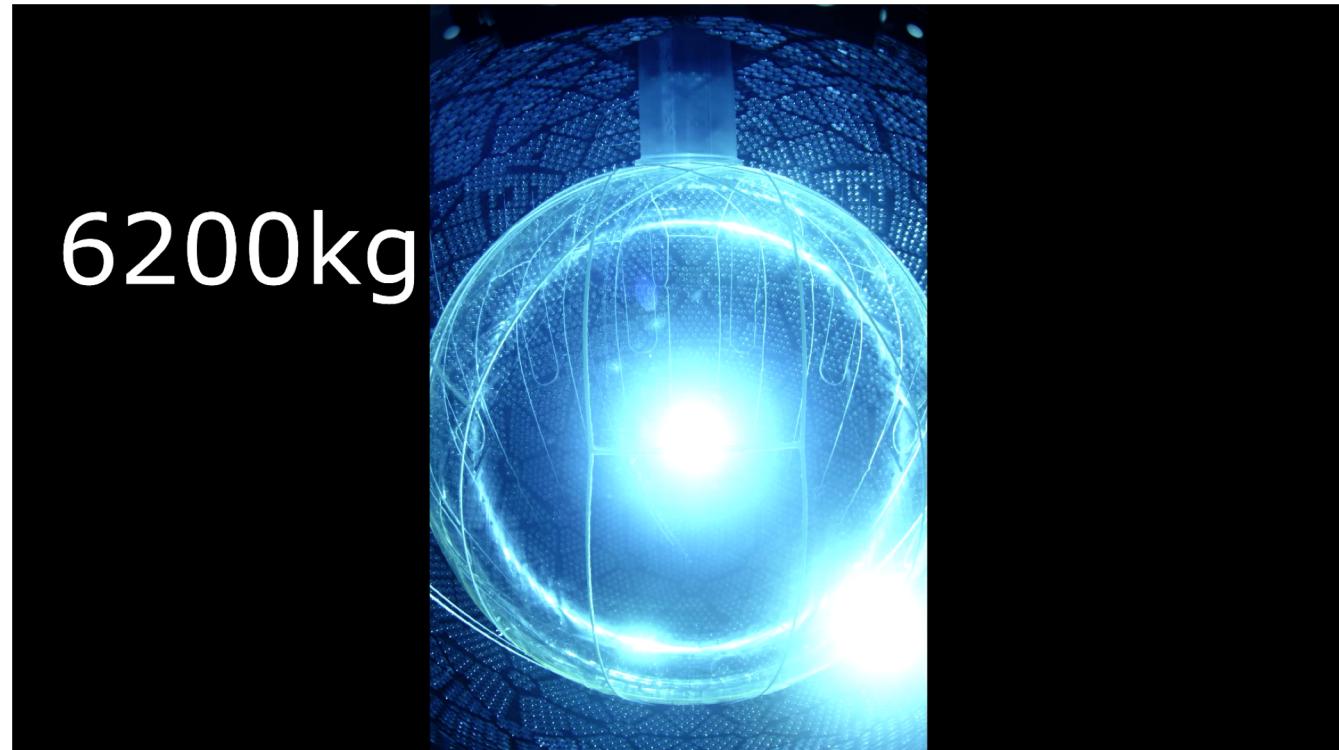


Brief Introduction to SNO+

Three main phases:

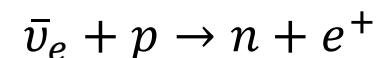
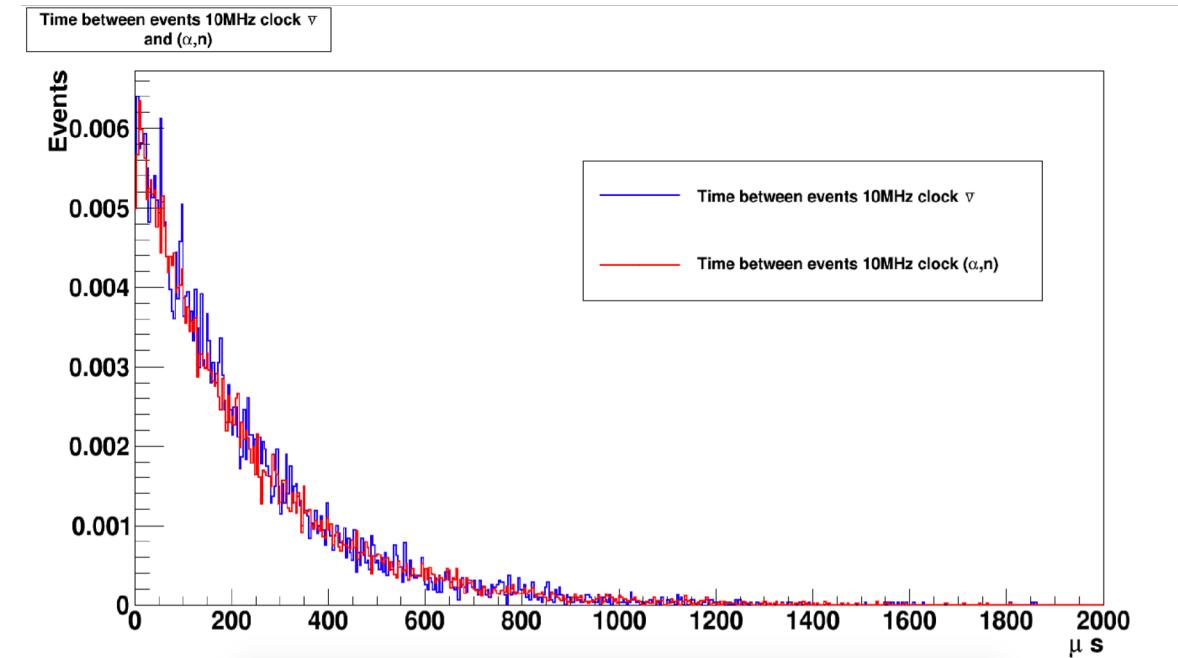
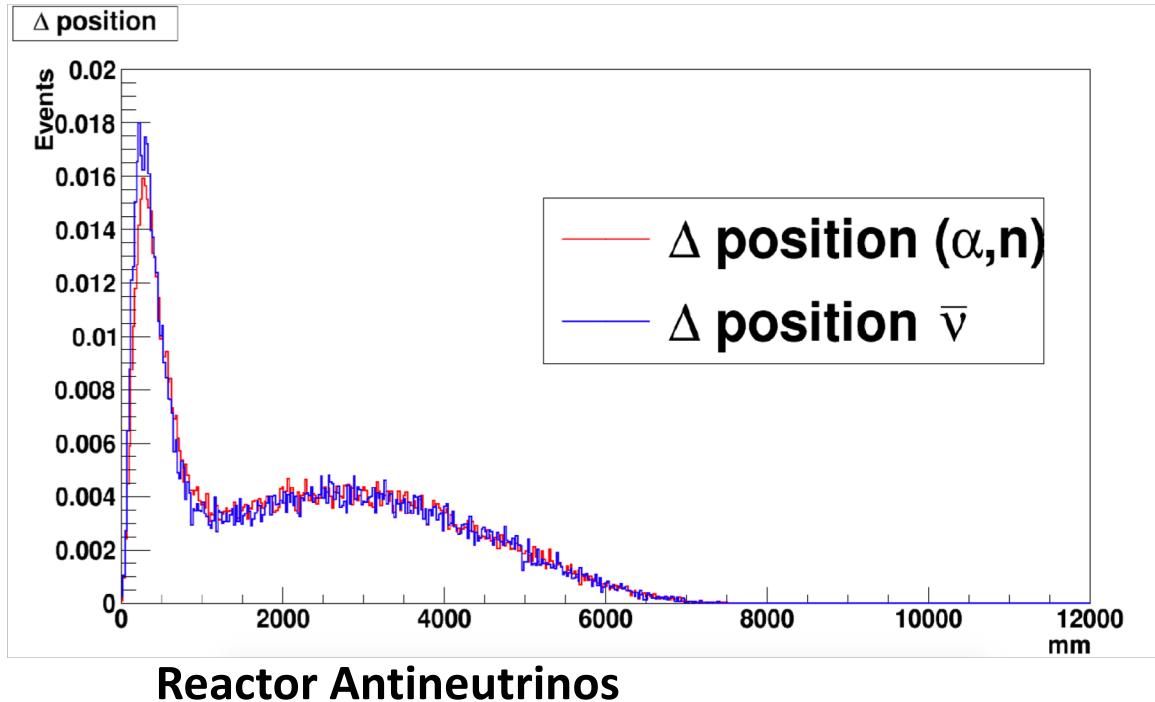
1. Water phase
2. Scintillator phase
3. Scintillator loaded with Te phase

Current situation: transition between the 1st and 2nd phases, with scintillator being inserted in the AV

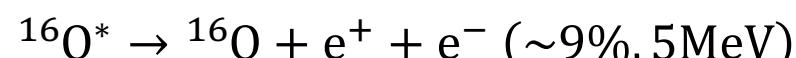


Position and Time Difference

AV with Scintillator

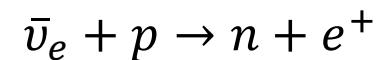
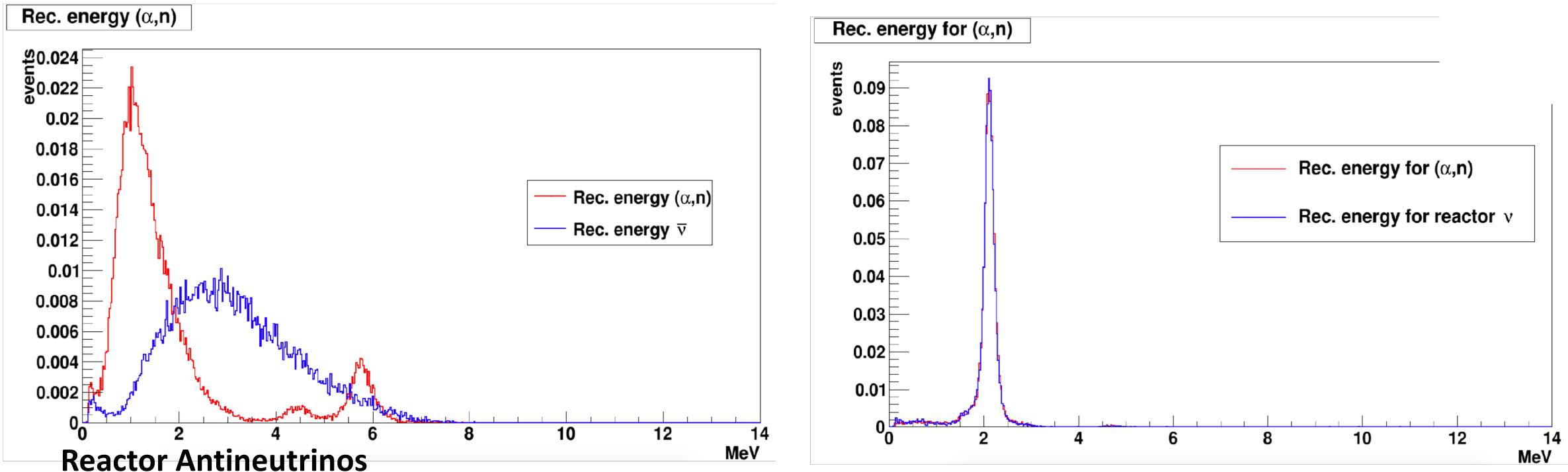


(α,n) Backgrounds

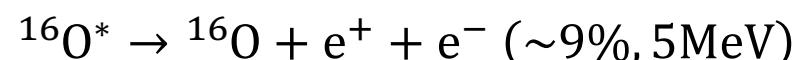


Event's Energy

AV with Scintillator



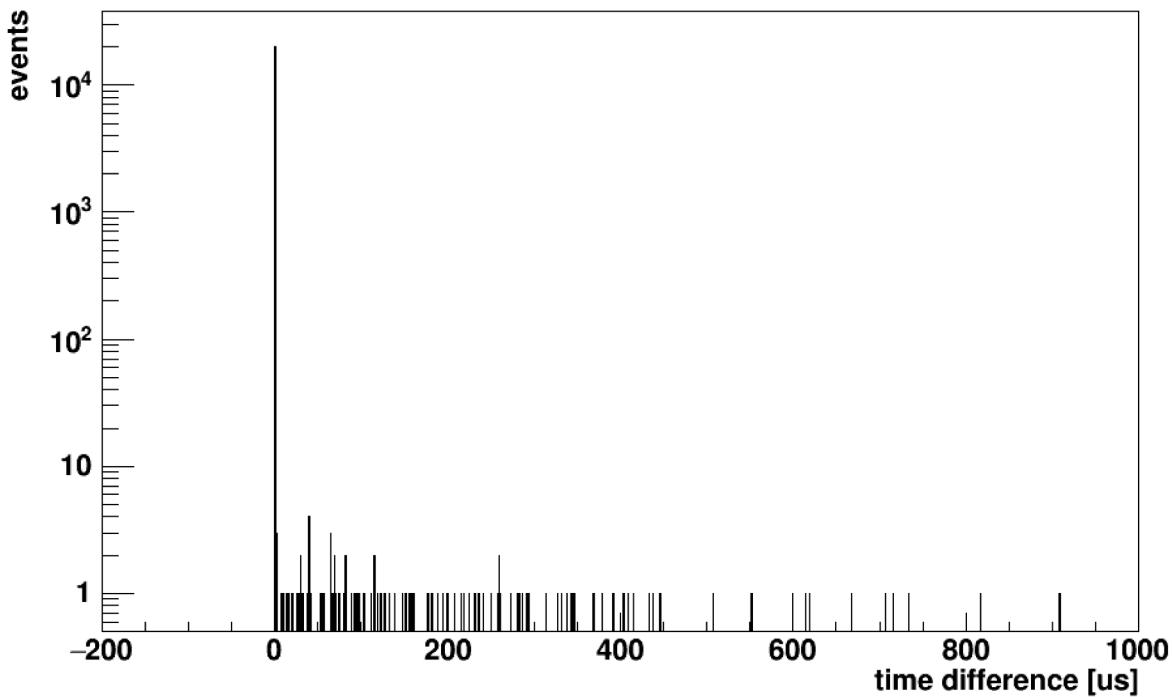
(α, n) Backgrounds



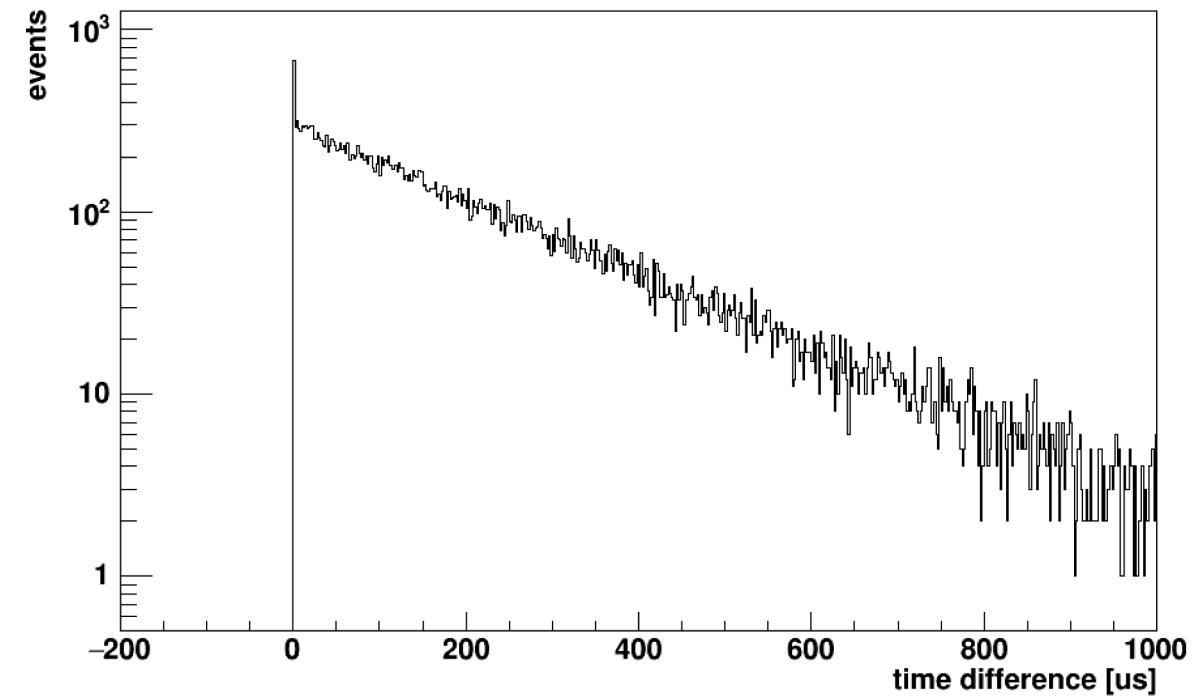
Detector's Efficiency... Applying a Time Cut

AV with Water + Scintillator

Difference between mct and clock10 (event 0)



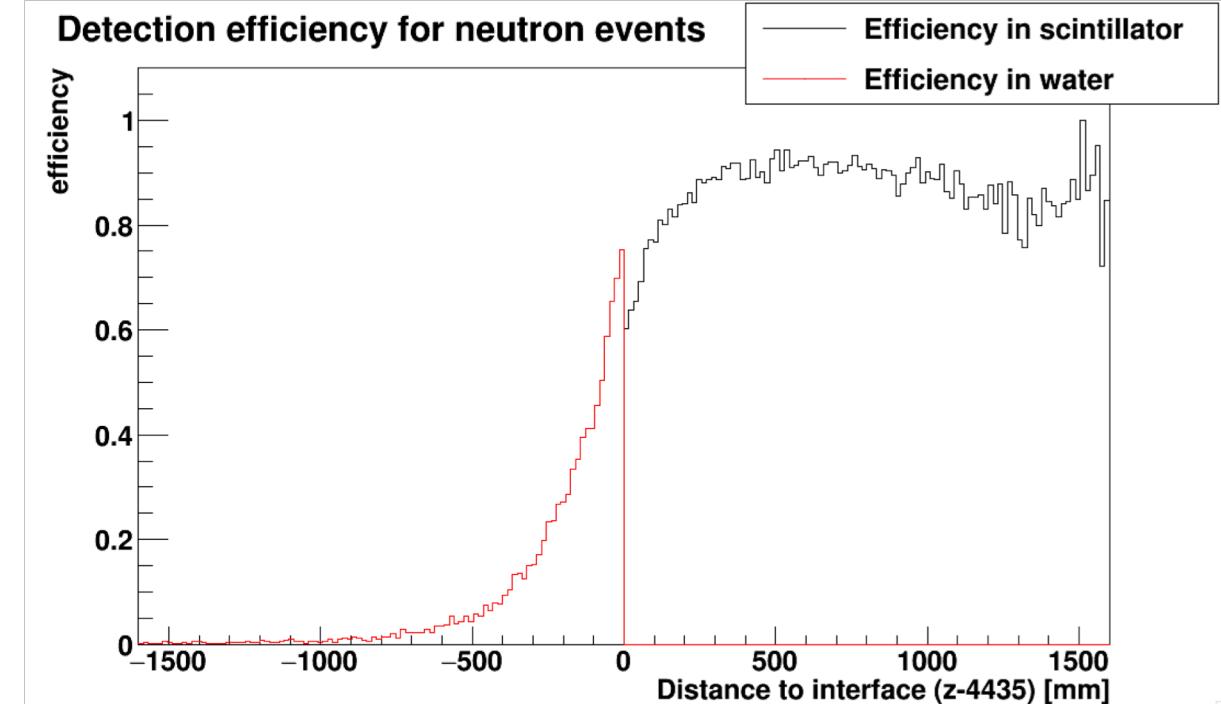
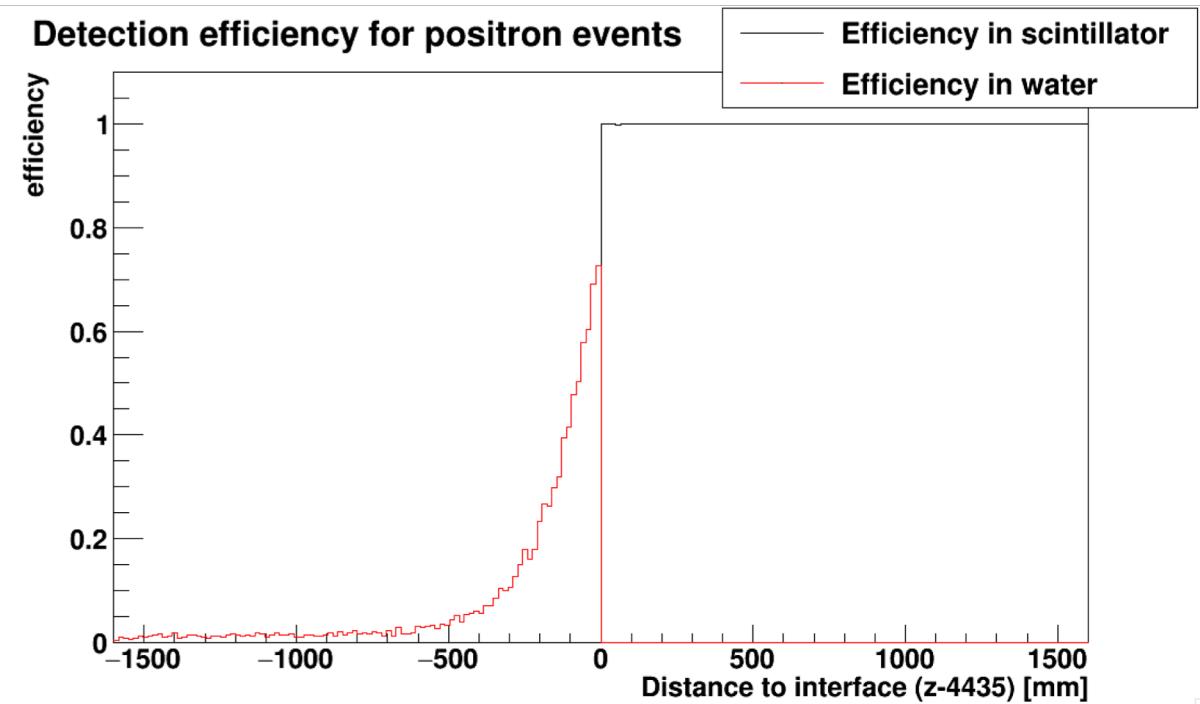
Difference between mct and clock10 (event 1)



$$\bar{\nu}_e + p \rightarrow e^+ + n$$

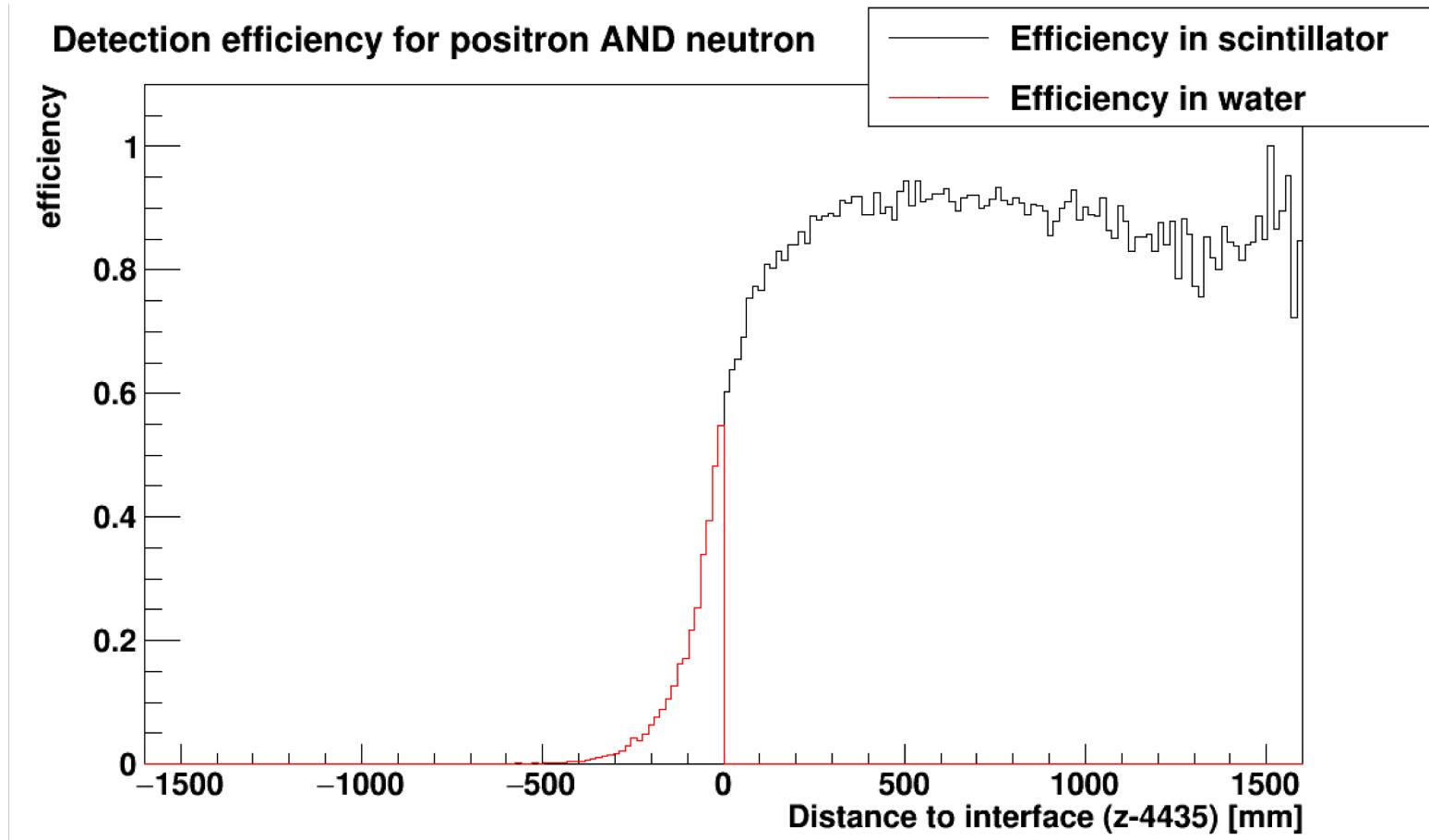
Detector's Efficiency

AV with Water + Scintillator



Detector's Efficiency – Both Events

AV with Water + Scintillator



Questions?