Background neutrons in the Tracker Subsystem

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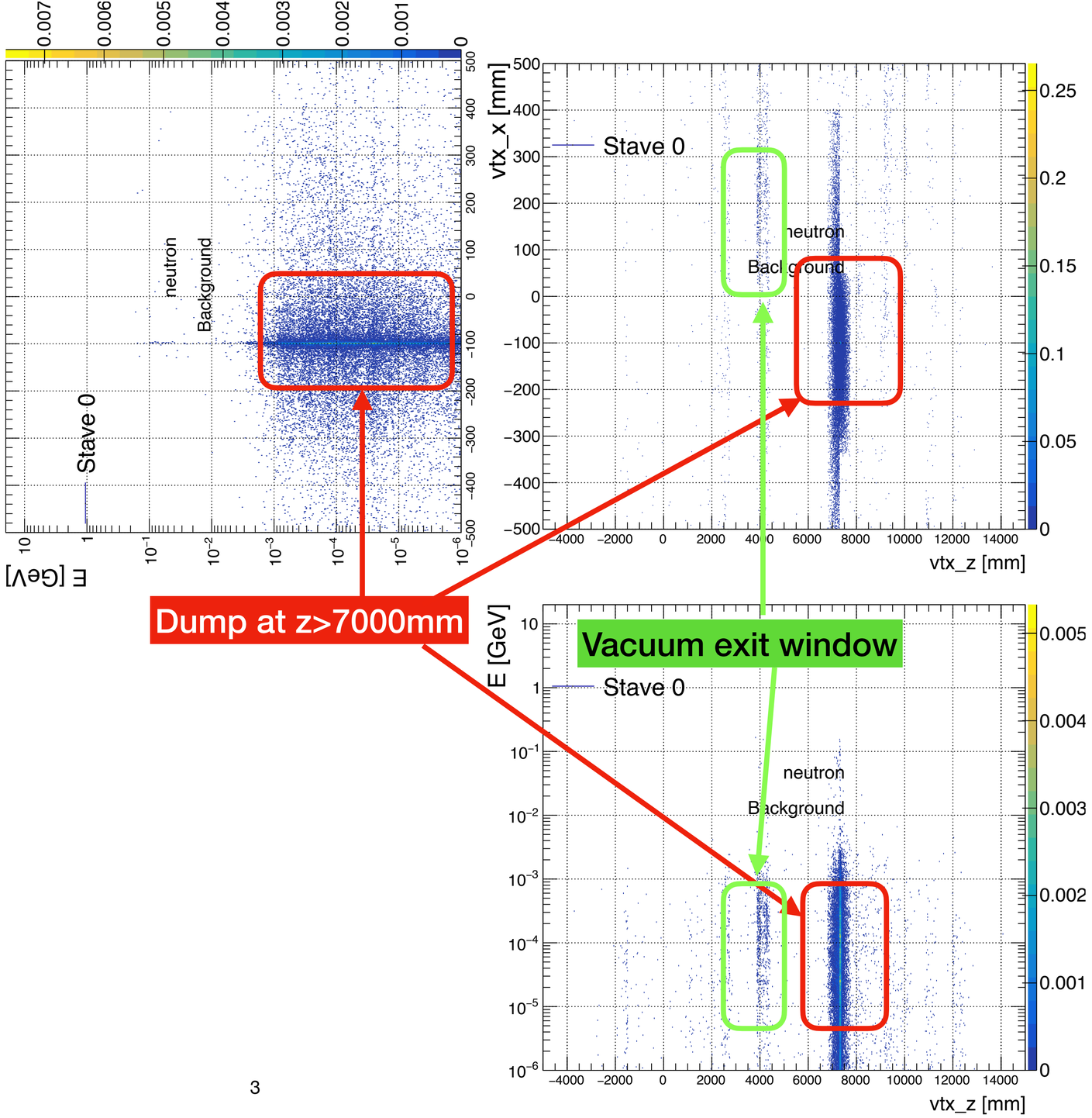
- e+laser hics setup
  - Only electron beam, no laser.
    - simulation with QGSP_BERT_HP physics list
  - Looked at the background particles:
    - Plots from the tracks intersecting the tracker plane (not necessarily making a hit in the tracker).
  - 0.1855 BX of electron beam only file used.
  - Plots normalized to per BX

Neutrons in Inner Stave, first layer of tracker

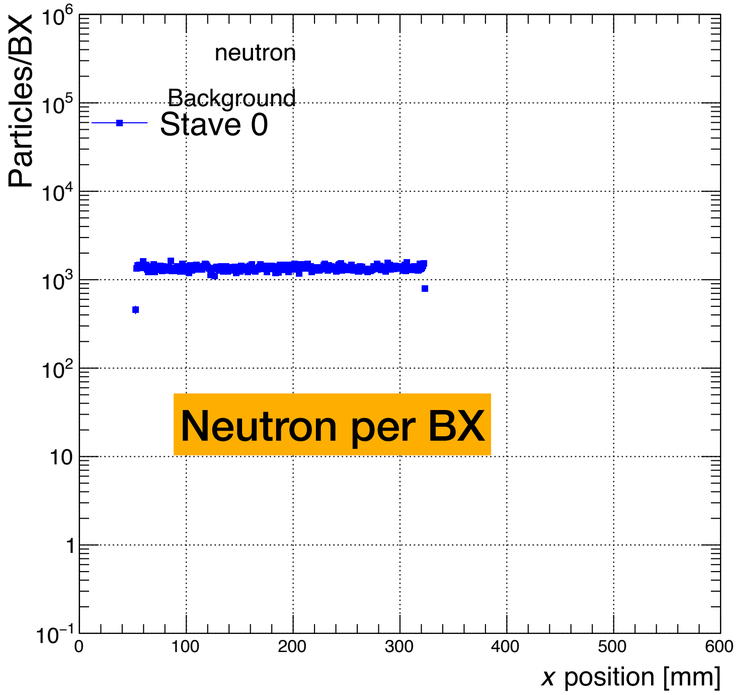
- ✦Most of the neutrons coming from the dump at z ~ 7000 mm
- ✦Few neutrons are coming from vacuum exit window
- ✦Neutrons are not very energetic

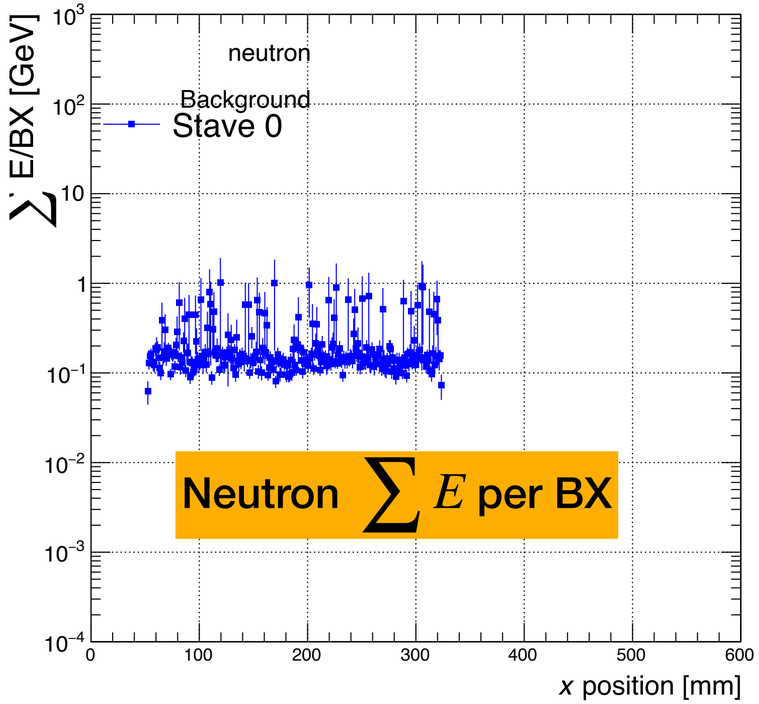


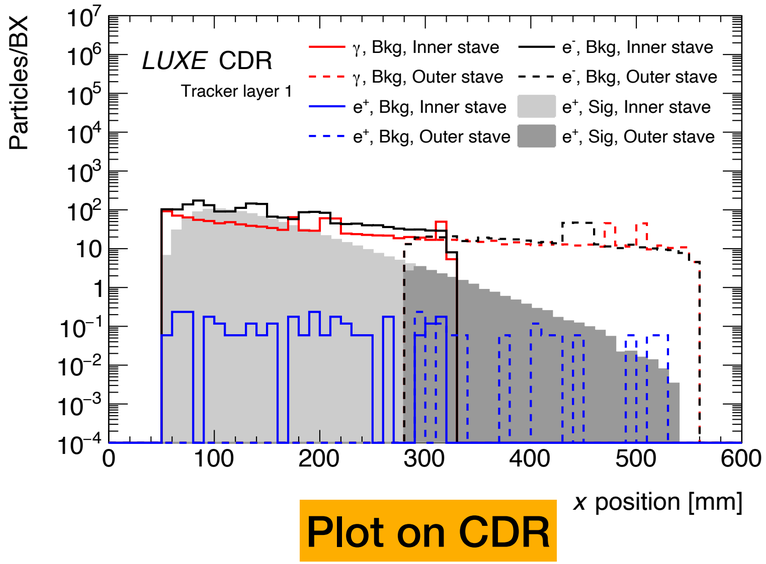
Neutrons in Inner Stave, first layer of tracker, 1D plots

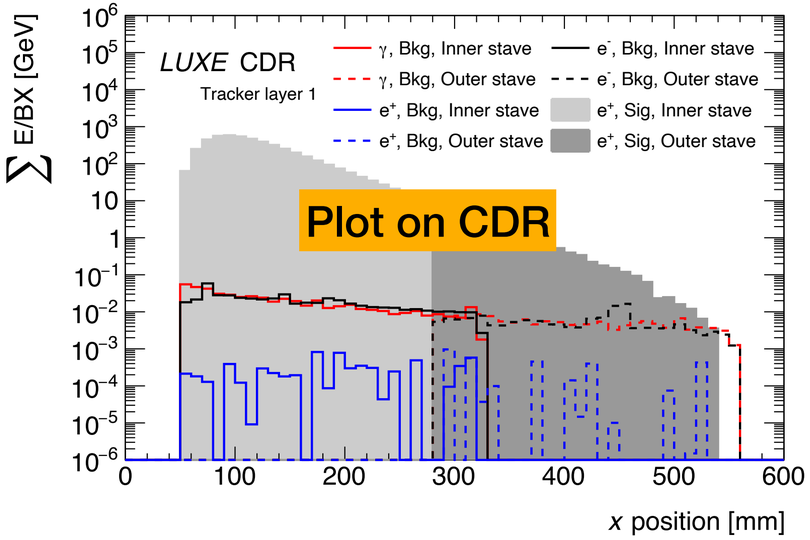
★Though the number of neutrons high, they will not create hit in the tracker layers as they are neutral particle.

★ This was checked from the Hits tree.

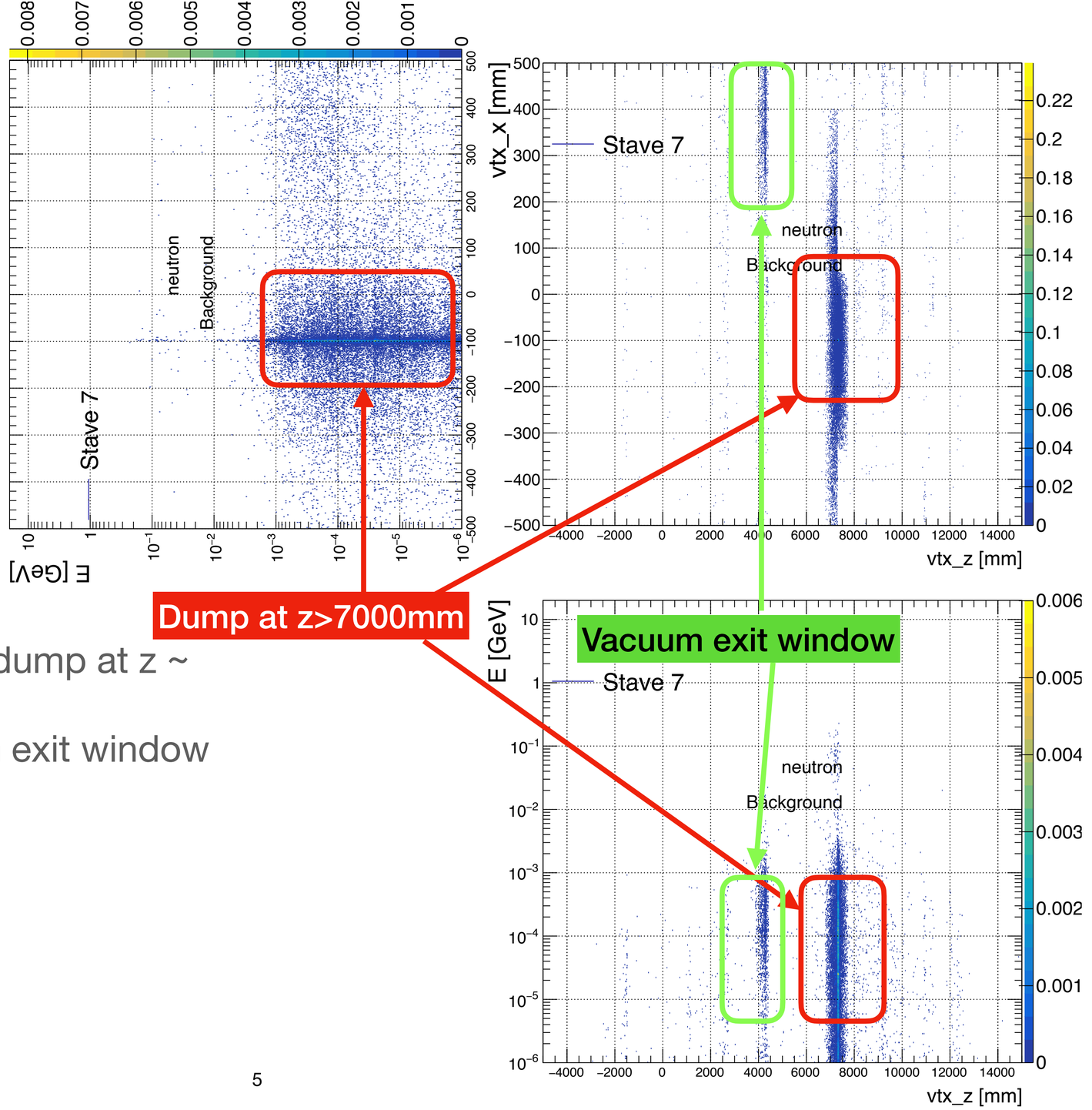








Neutrons in Outer Stave, last layer of tracker



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Neutrons in Outer Stave, last layer of tracker, 1D plots

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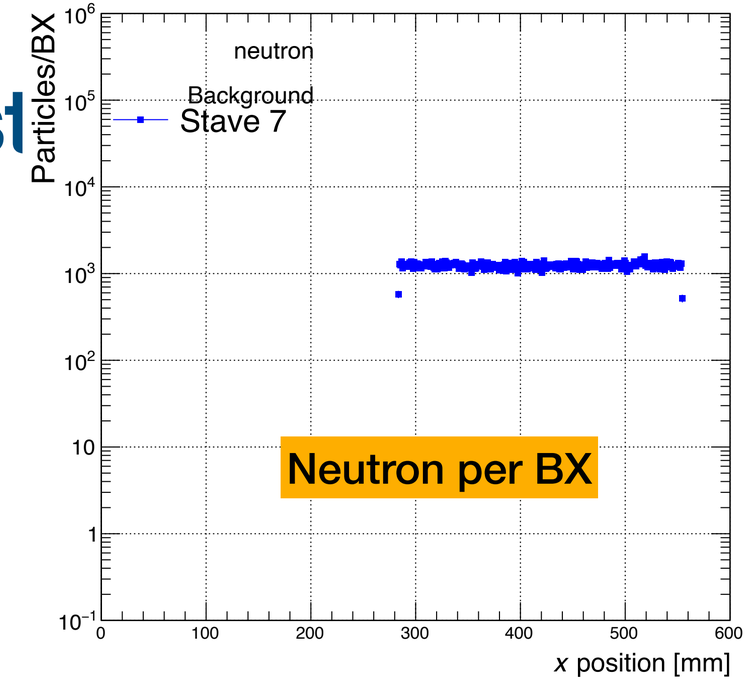
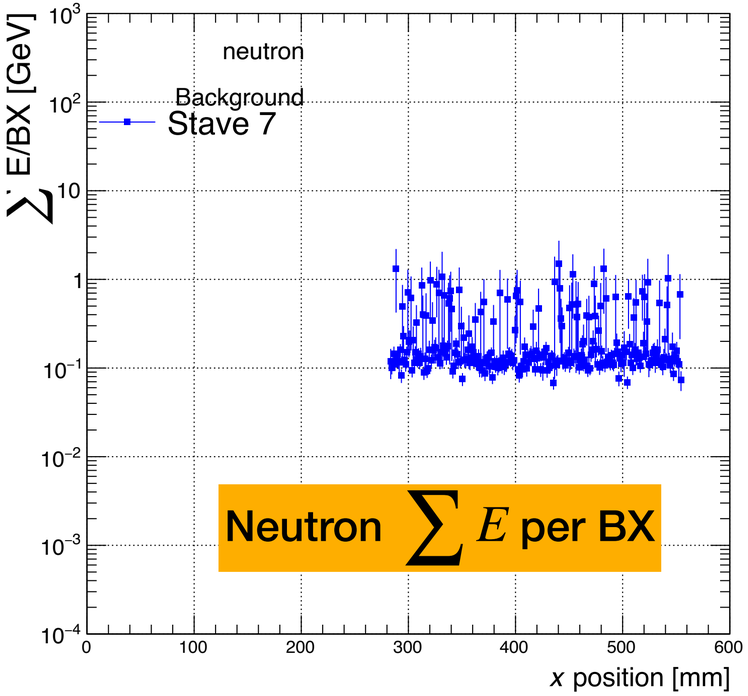
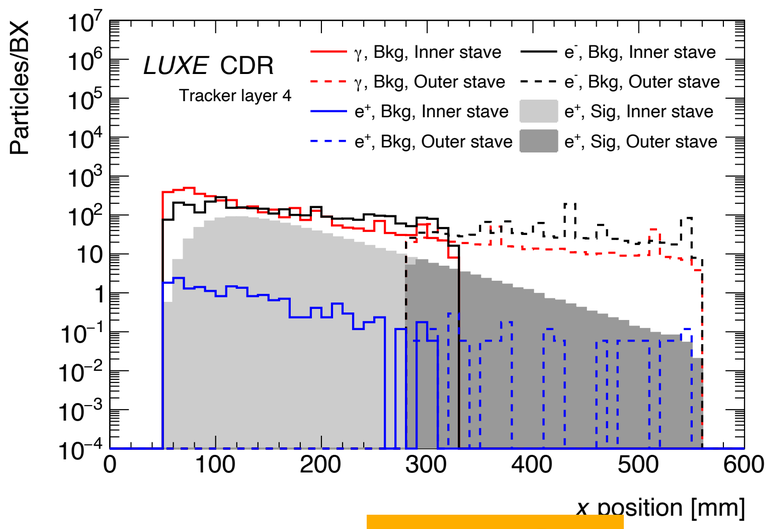
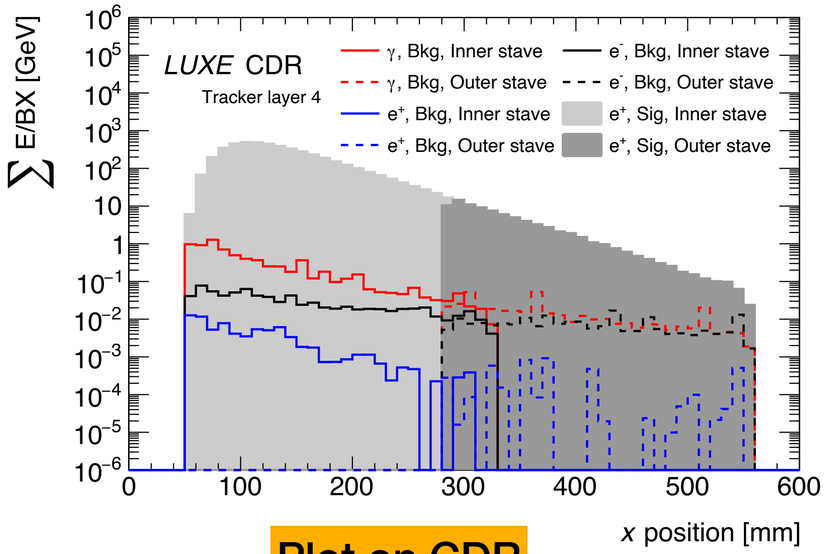


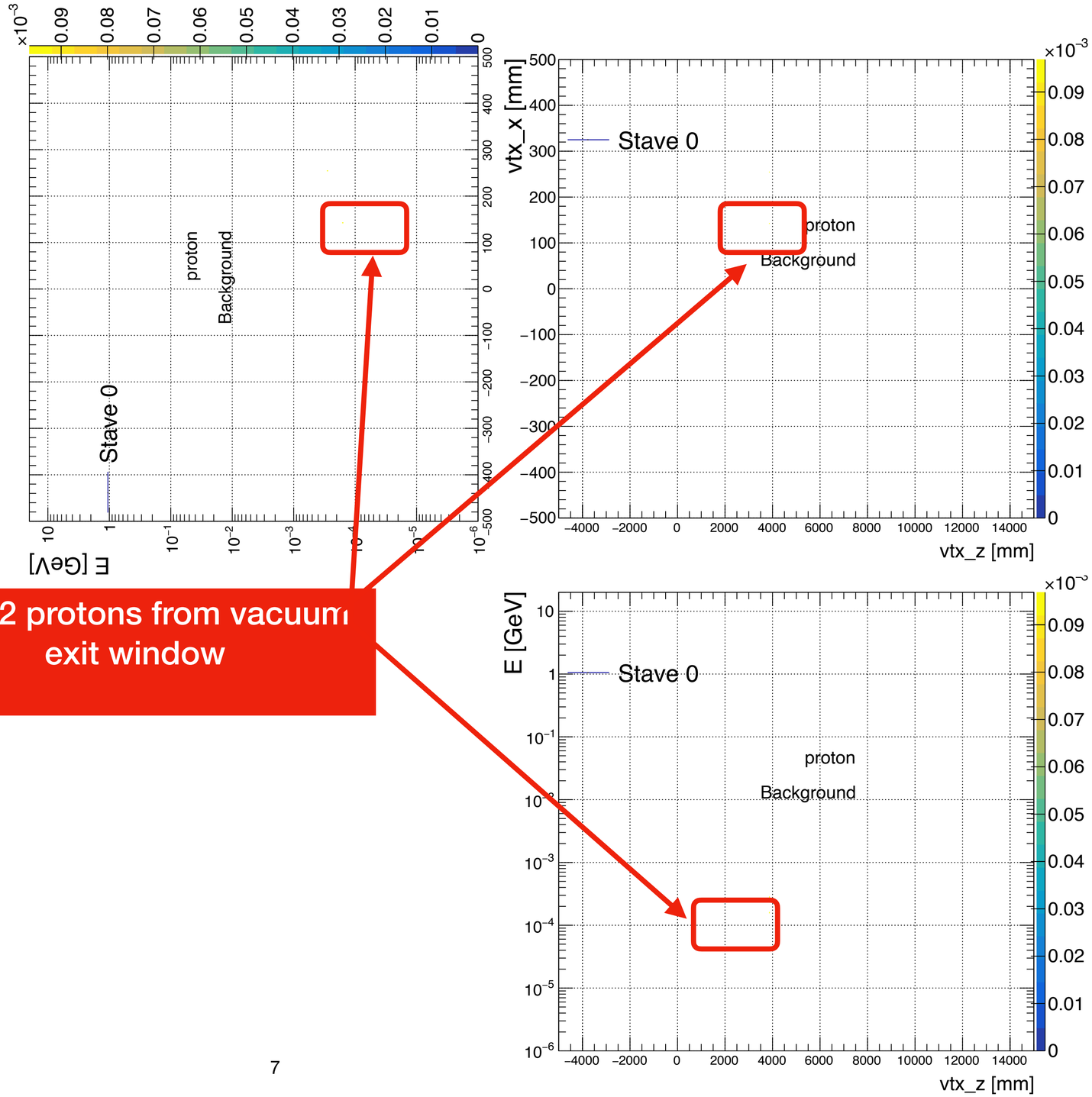






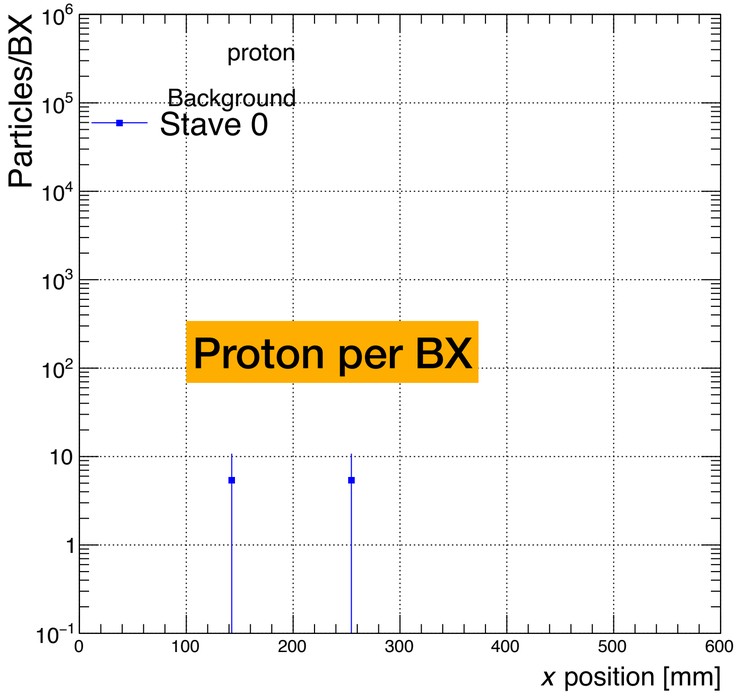
Protons in Inner Stave, first layer of tracker

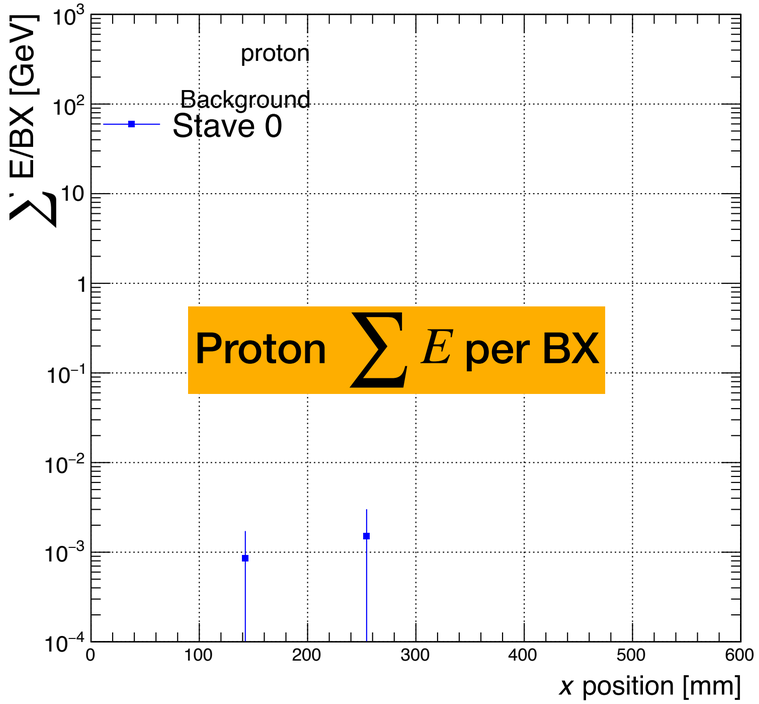
- ✦Only 2 protons, coming from vacuum exit window
- ✦Energy ~ 10^{-4} GeV

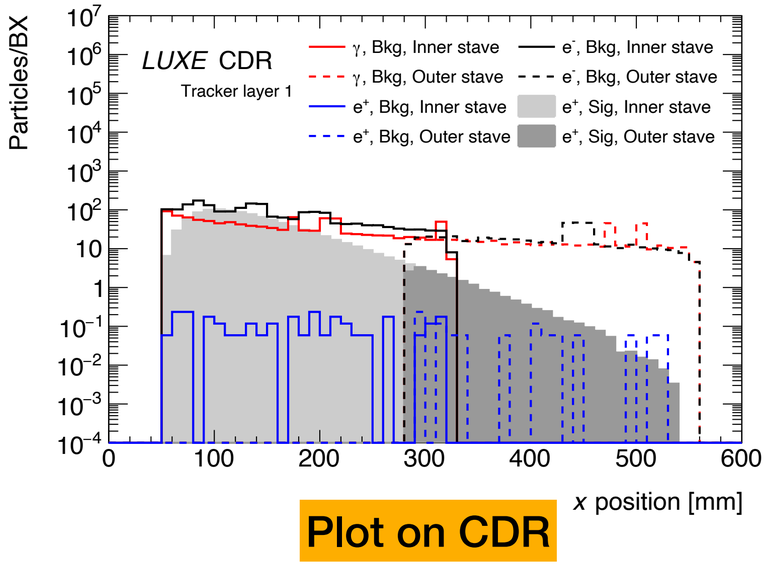


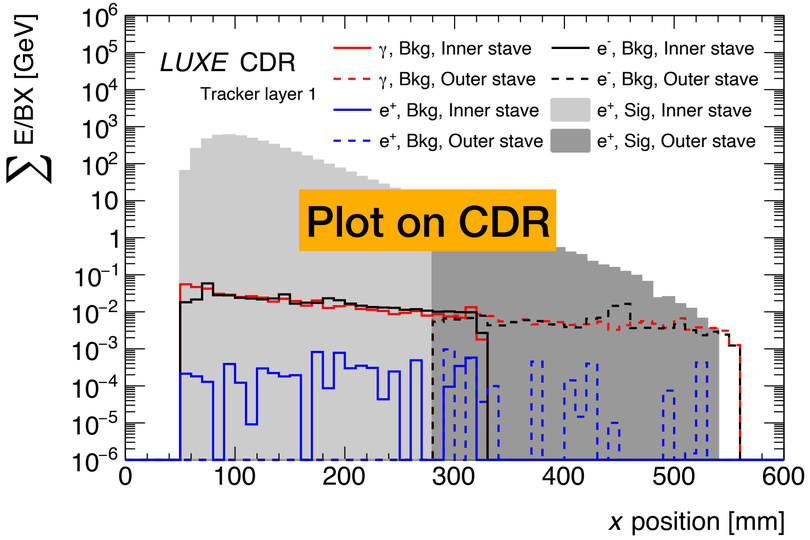
Protons in Inner Stave, first layer of tracker, 1D plots

★Not many protons
★ Their energies are also small



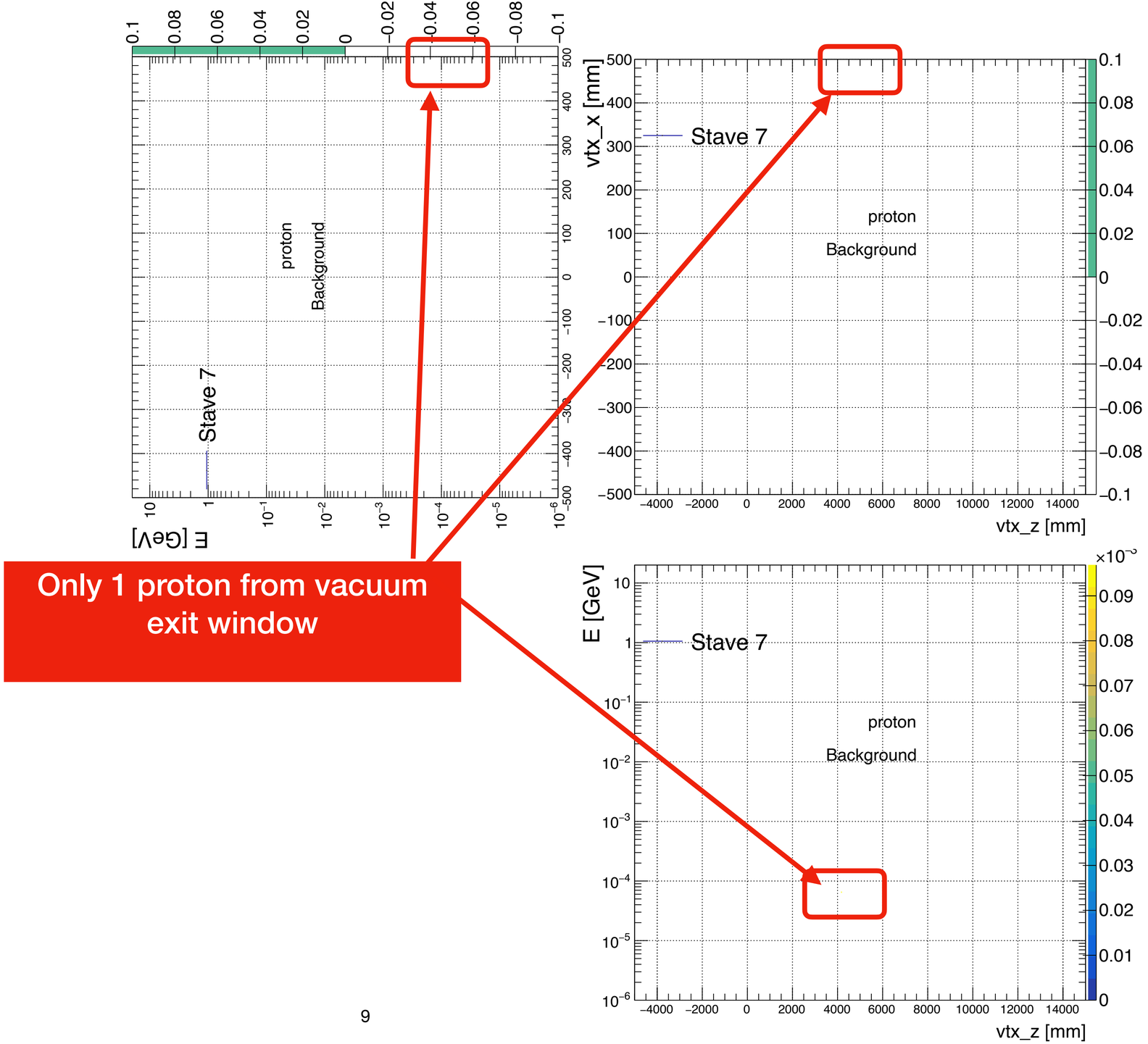




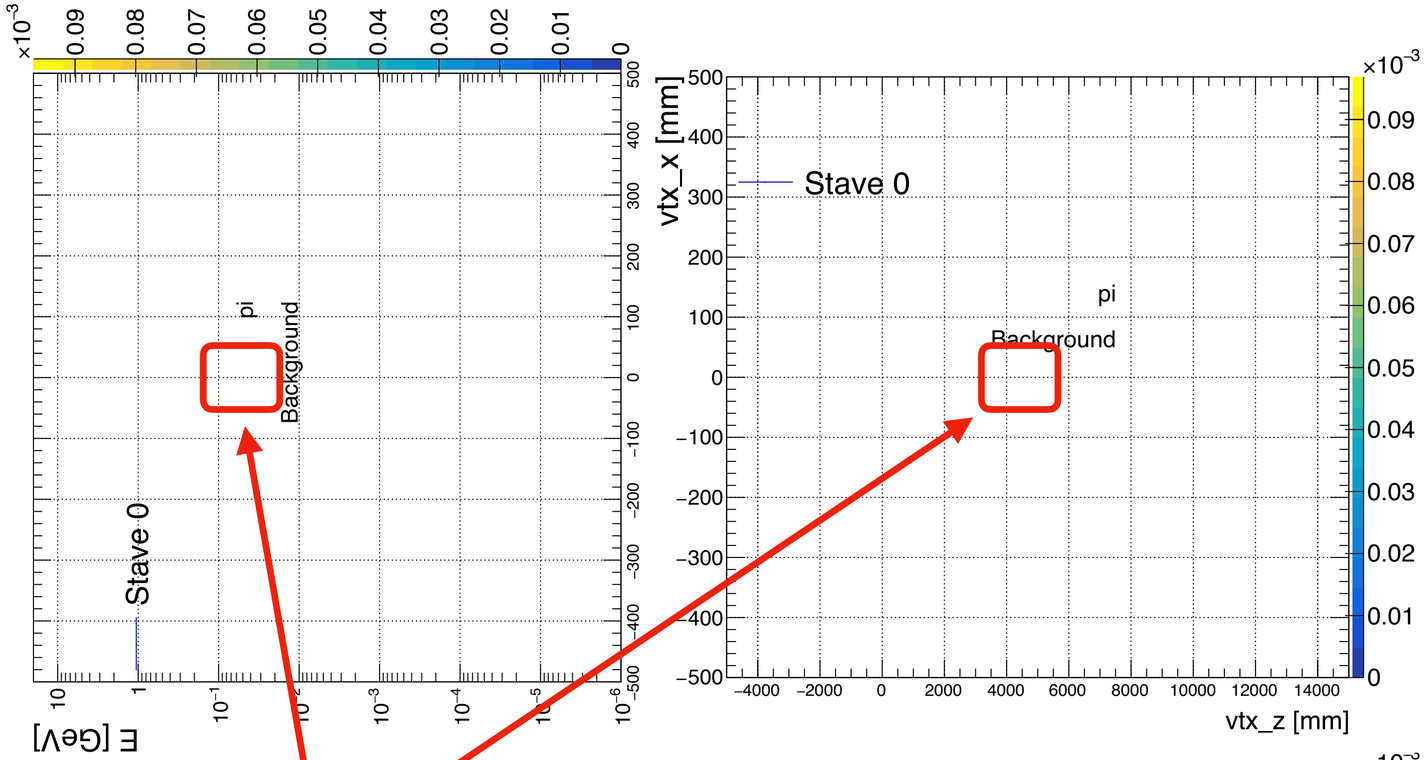


Protons in Outer Stave, last layer of tracker

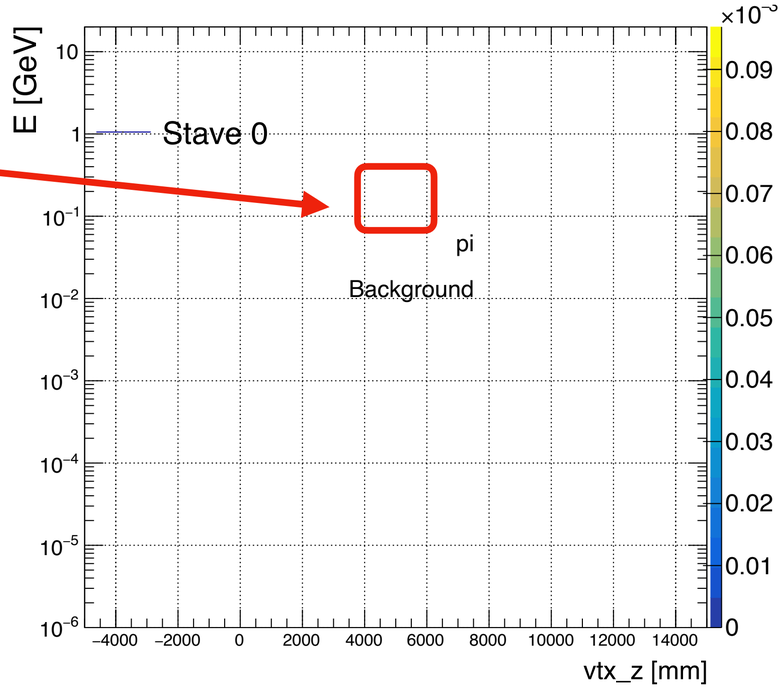
- ✦Only 1 proton, coming from vacuum exit window
- ✦Energy ~ 10^{-4} GeV



Pions in Inner Stave, first layer of tracker



Only 1 pion from vacuum exit window

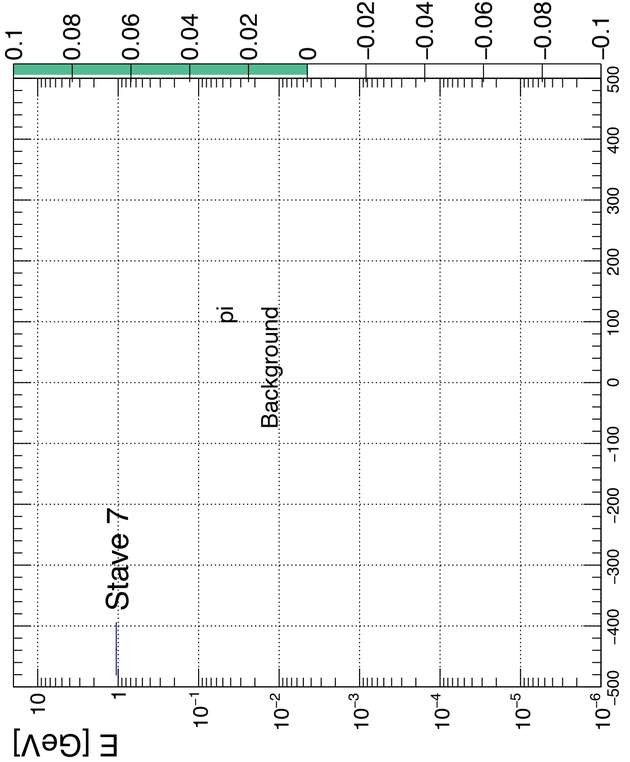


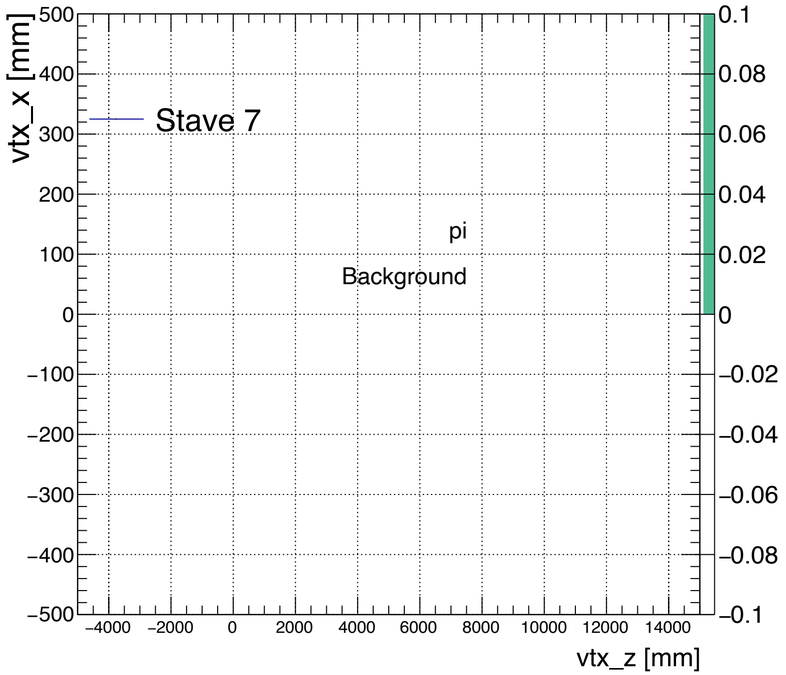
- ✦Only 1 charged pion, coming from vacuum exit window
- ✦Energy ~ 0.1 GeV

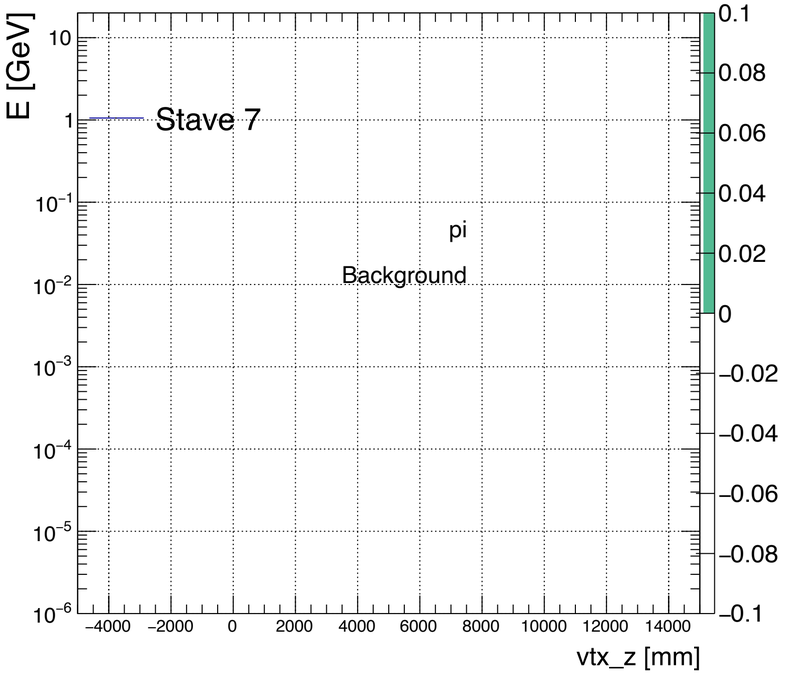
Summary

- First look at the QGSP particle list
- **Neutrons are radiating from the dump - most of them are low energetic.**
  - They did not create any hit.
- Protons and pions are coming from vacuum exit window (z ~ 3800mm to z~3900 mm)
  - Not many protons/pions: limited by statistics.
- **No muons/pi0 found.**

Pions in Outer Stave, last layer of tracker

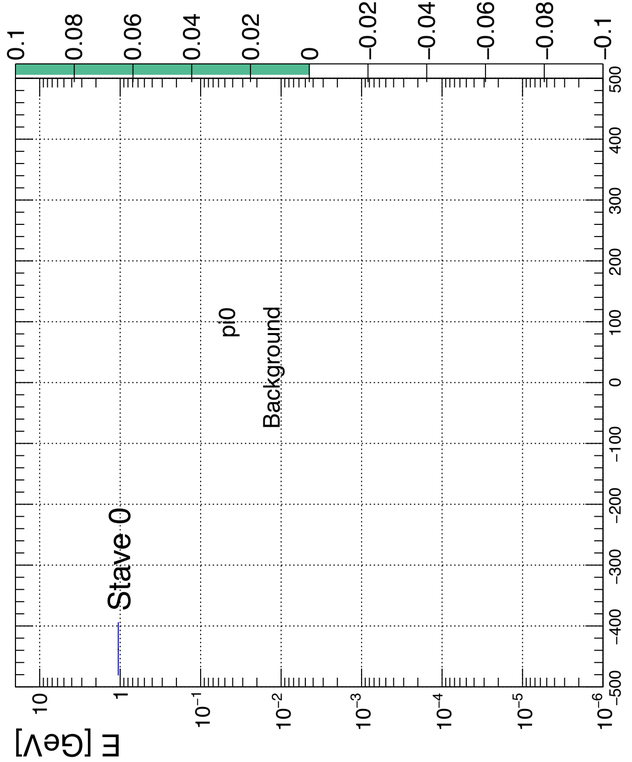


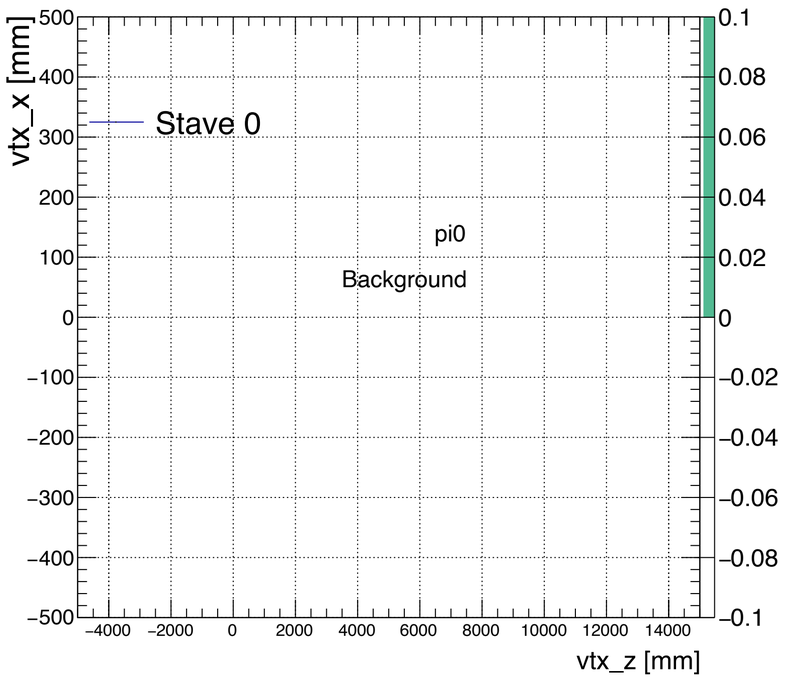




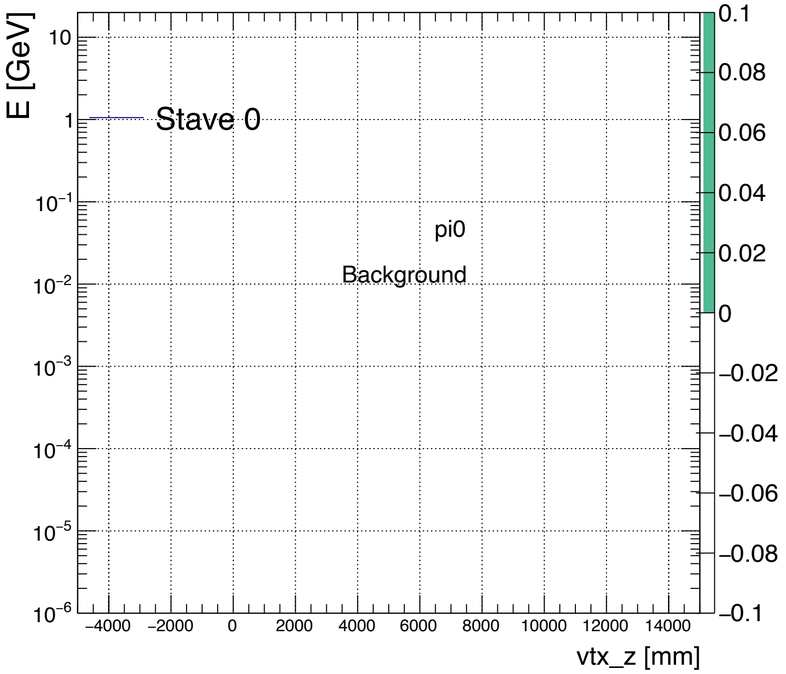
✦No charged pion

Neutral pions in Inner Stave, first layer of tracker

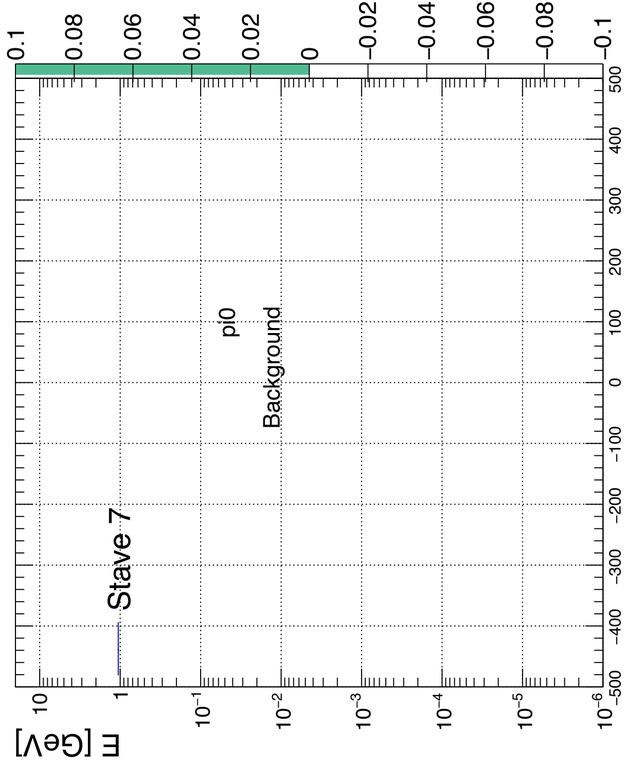


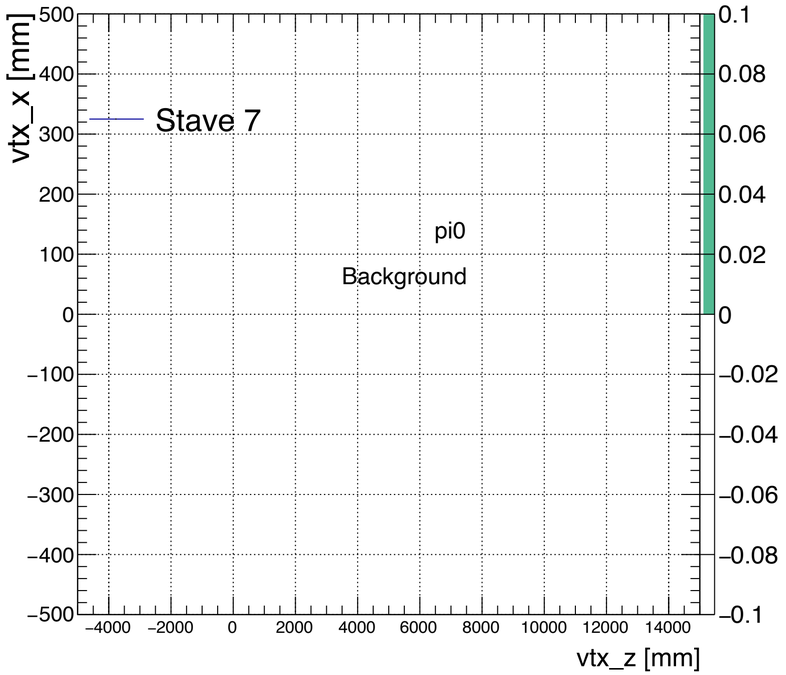


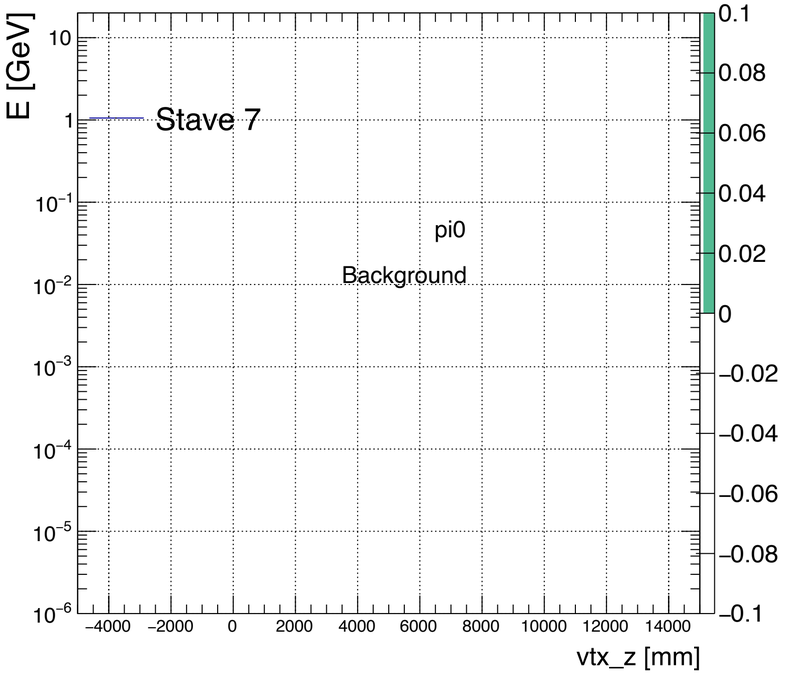
No neutral pion



Pions in Outer Stave, last layer of tracker

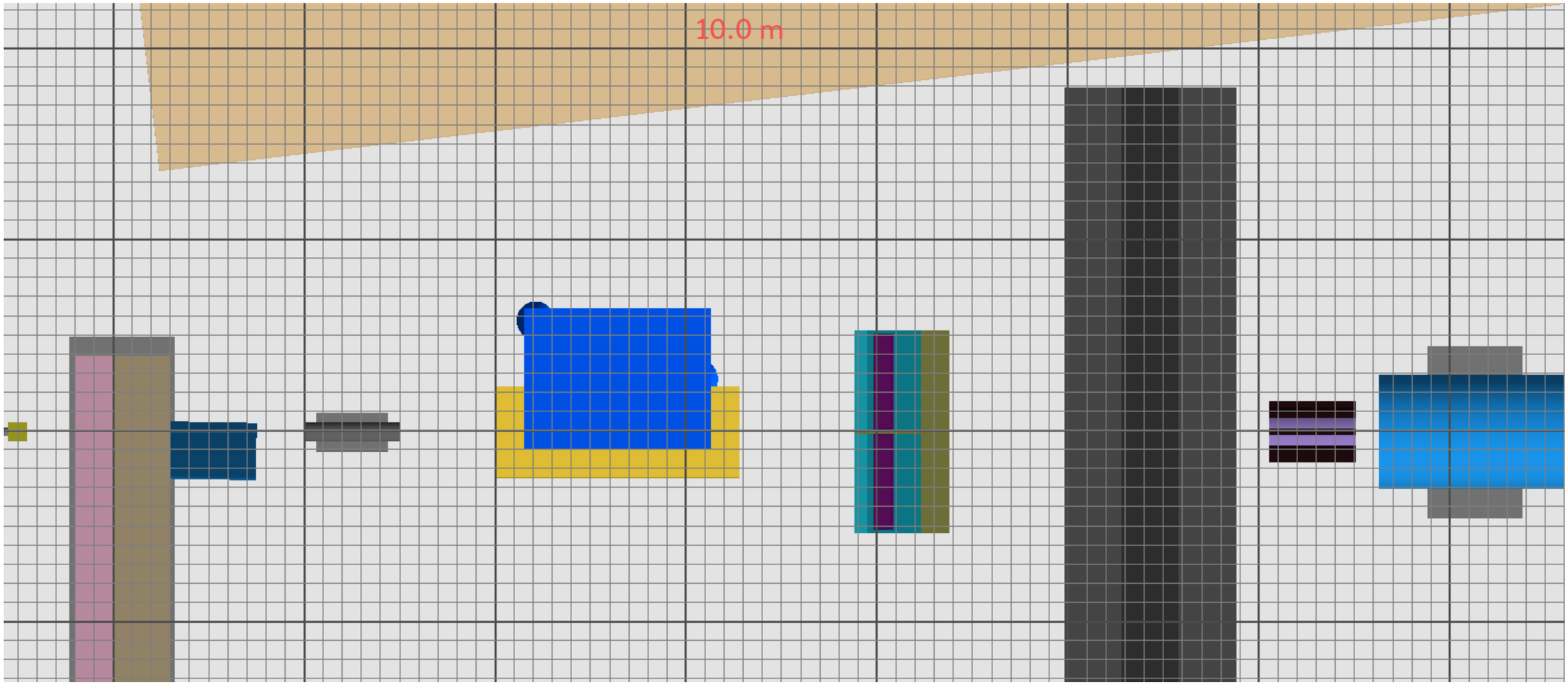






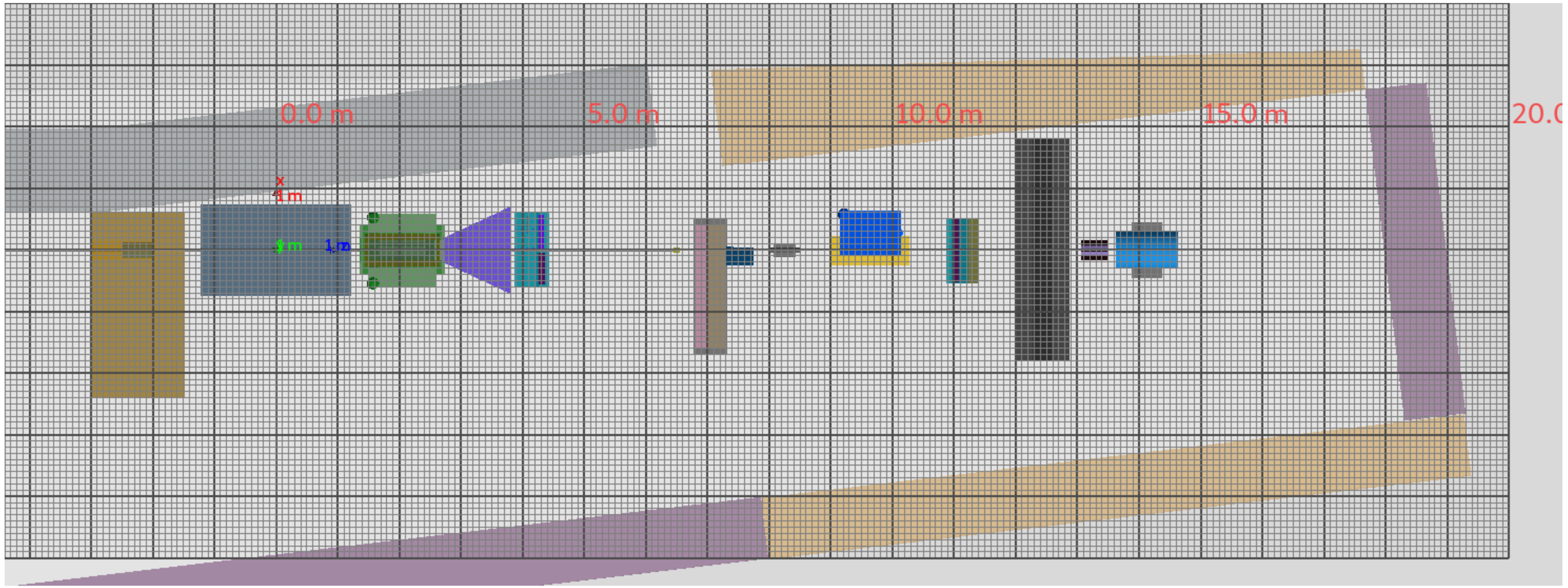
No neutral pion

The subsystems near the beam dump



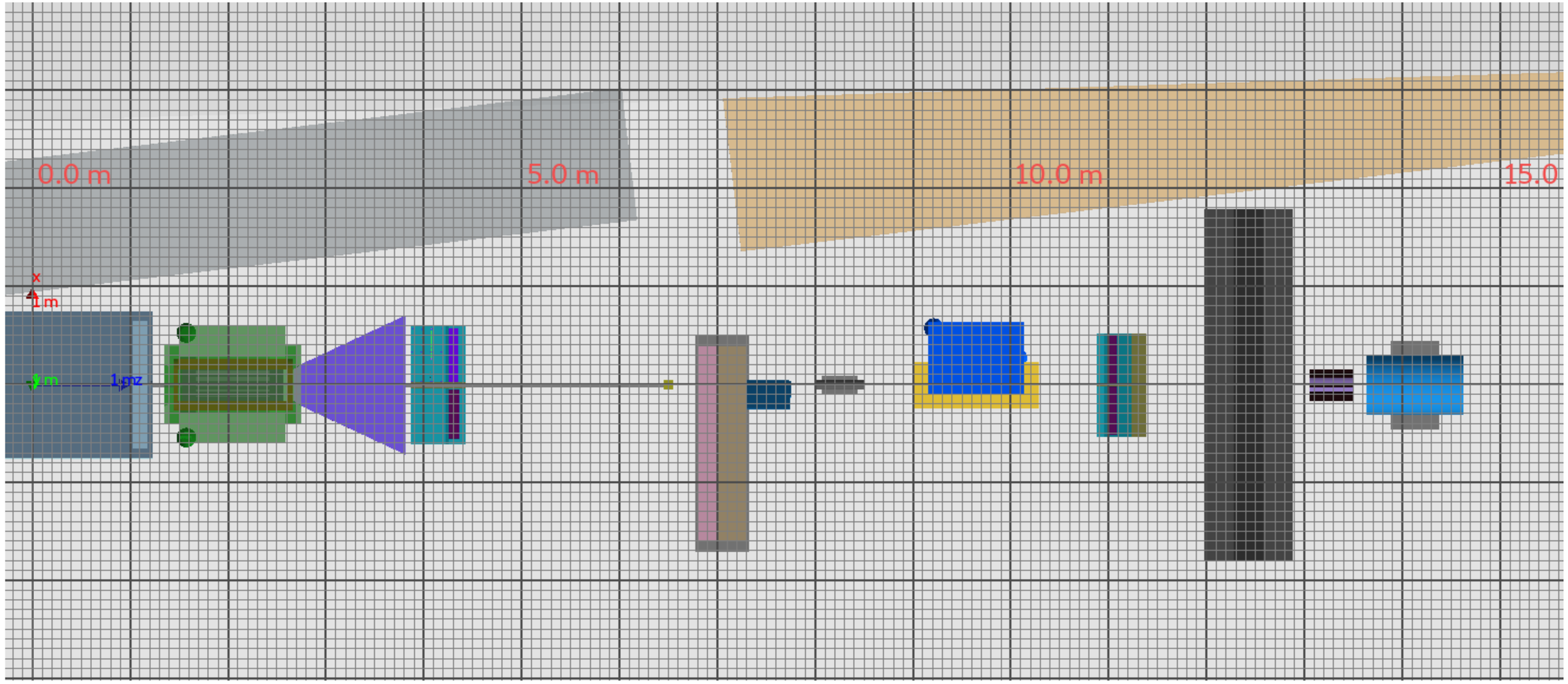
Plots from Sasha

The entire subsystem



Plots from Sasha

The subsystems from the IP to beam dump



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