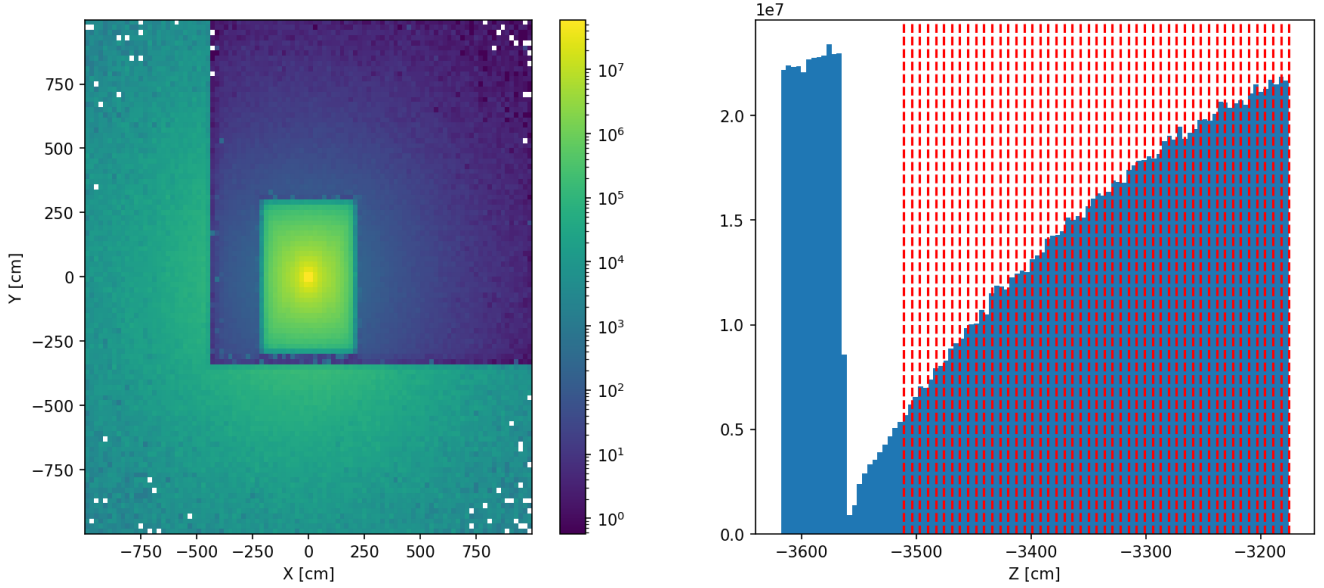
SND@SHiP update

22.10.2024

Muon neutrino flux

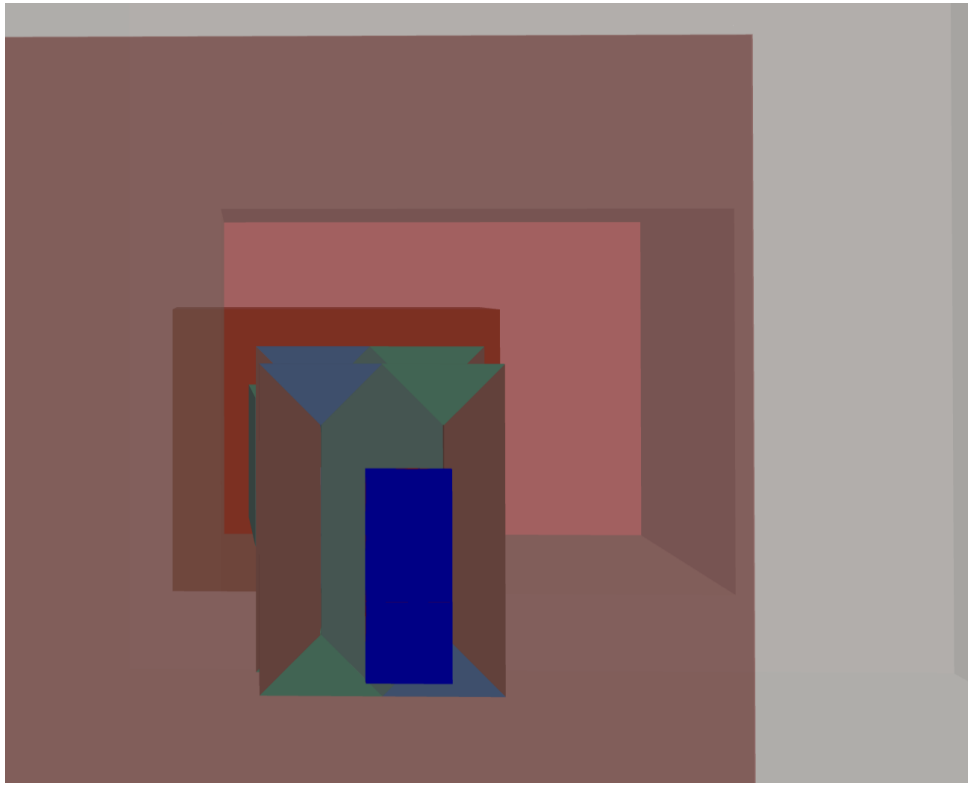
- Placing several sensitive planes within the last magnet
- Sample the numu interaction points within the last magnet and ~1m upstream

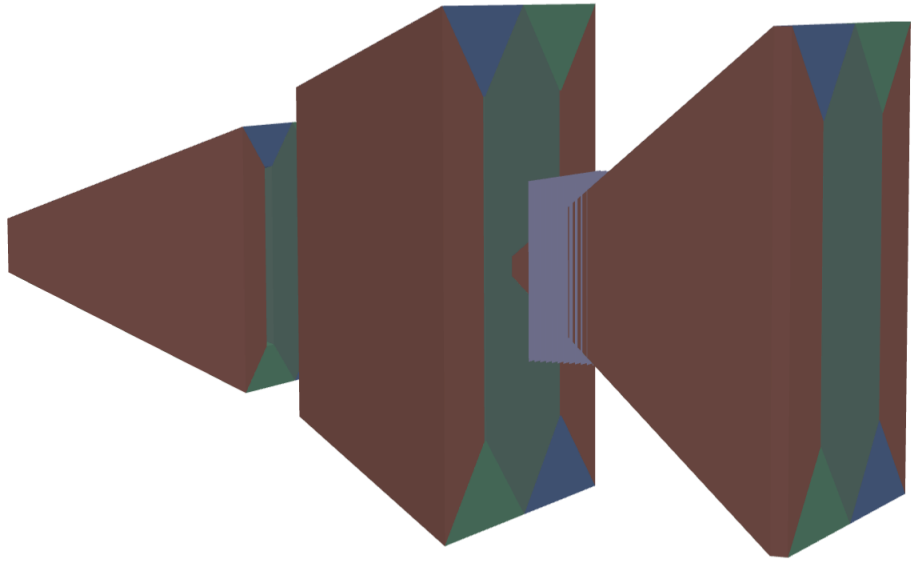


`len(df_points.query("abs(fStartX) < 250 & abs(fStartY) < 250"))/len(df_points)` — fraction of numu events within the magnet. ~66% of the whole statistics.

Reasonable cut on Z-range: $[-3650\ \mathrm{cm}, -3300\ \mathrm{cm}]$. Adding this cut to the formula above gives us: `len(df_points.query("abs(fStartX) < 250 & abs(fStartY) < 250 & fStartZ > -3650 & fStartZ < -3300"))/len(df_points)` and the fraction of ~41% of numu left.

Muon shield + planes

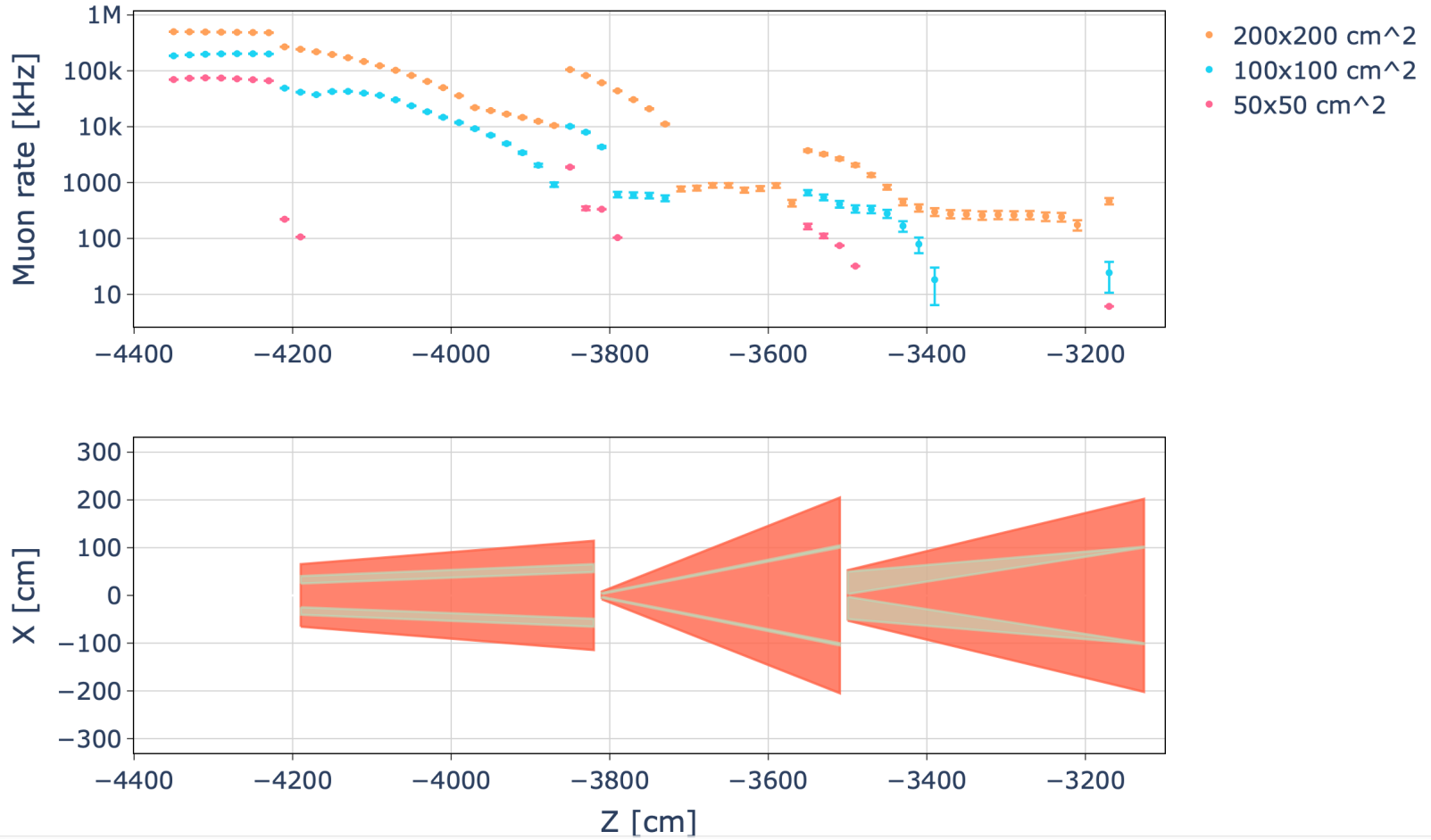




How to find ”good” events

- Easiest approach (for CCDIS): looking for the events where a muon managed to hit ~10 out 50 planes which sufficient for reconstruction: ~5% events where muon hit at least 1 sensitive plane.
- ???

Muon flux in the second part of the muon shield (SC option)



Muon flux in the second part of the muon shield (Warm option)