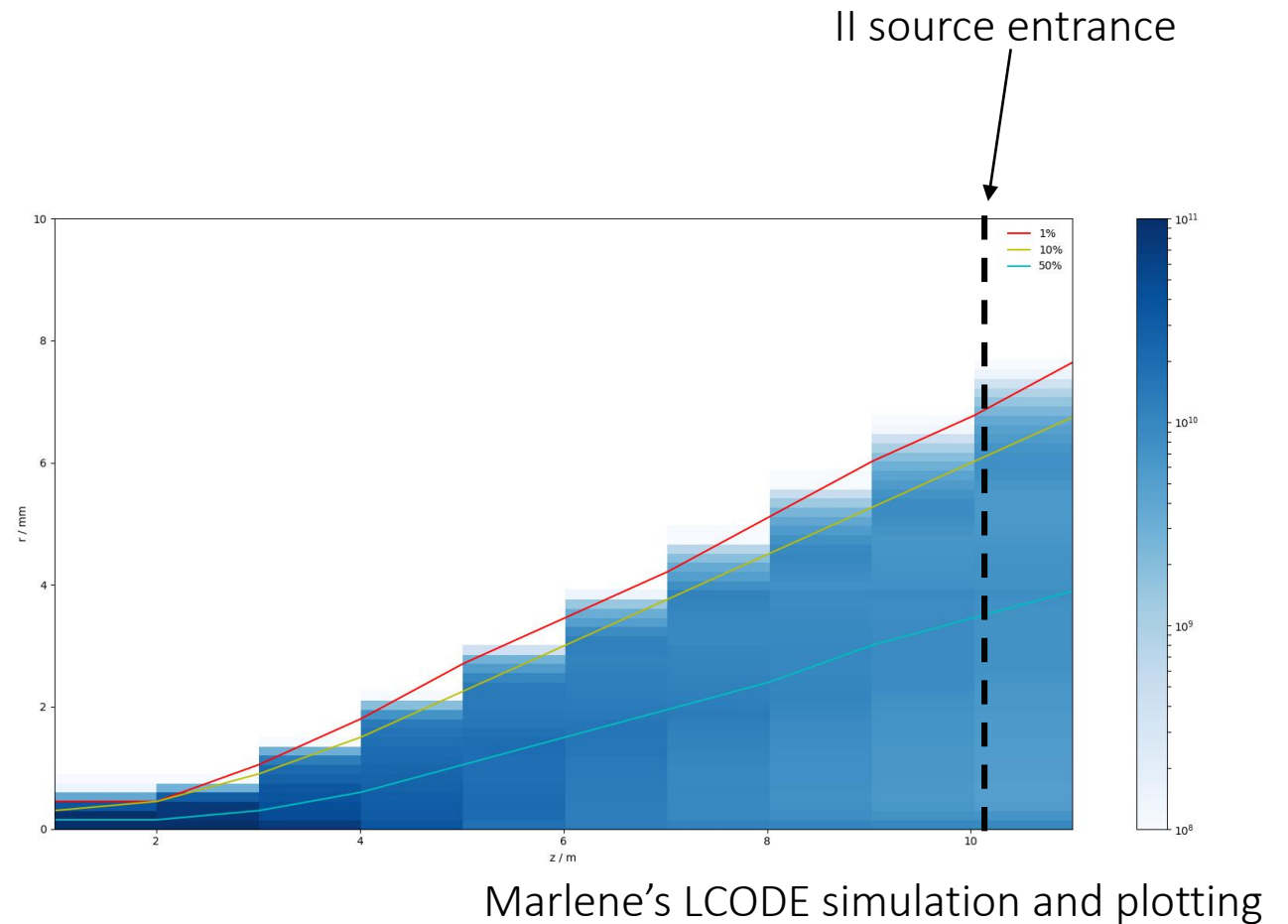


Second vapor source vacuum window size

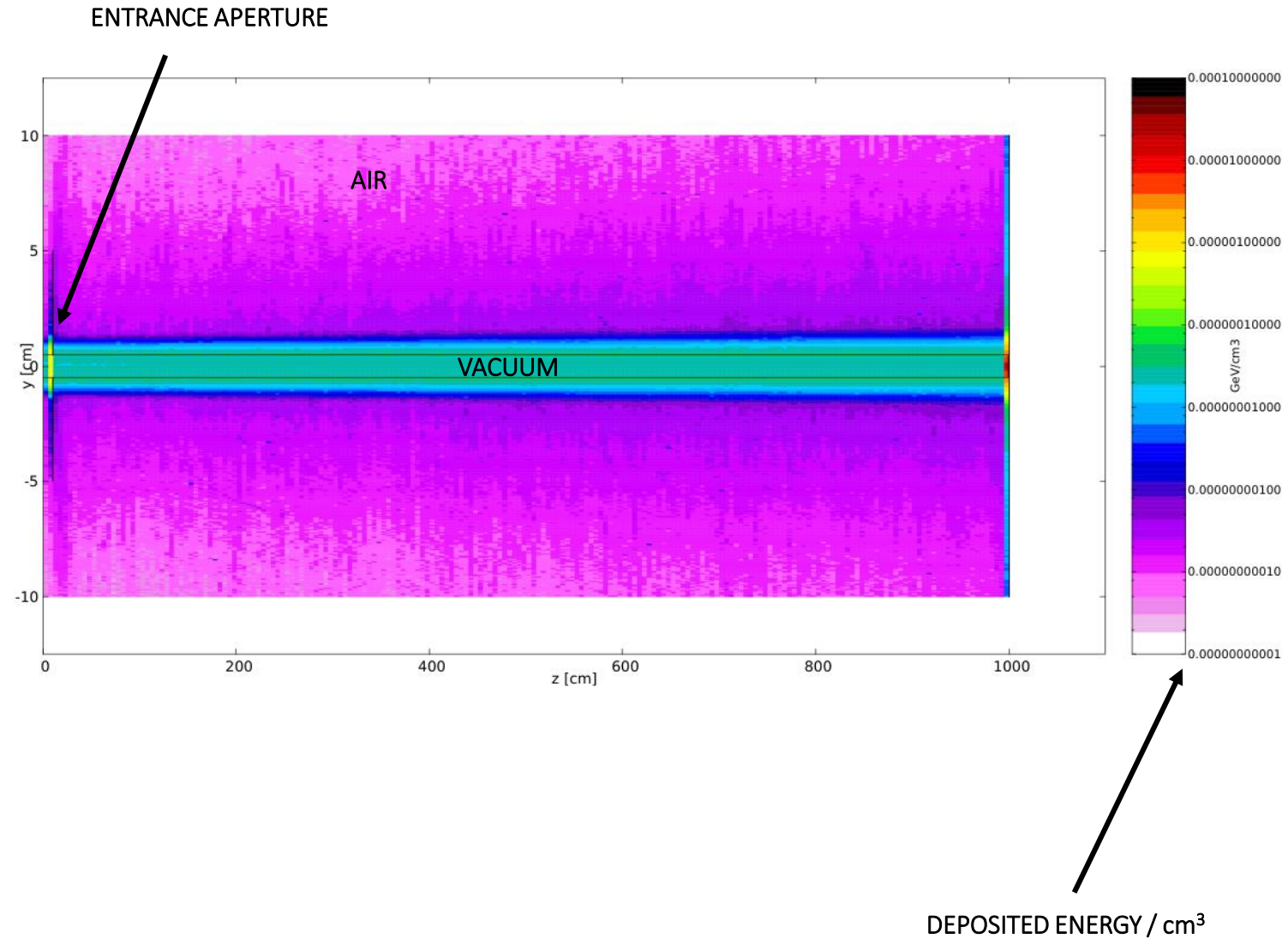
- As small as possible to reduce thickness
→ weak interaction with the electron beam
- Big enough to allow for an “easy” alignment
- Big enough to let most of the modulated proton bunch
(focused + defocused) enter the source to keep radiation as low as
reasonably achievable

How many protons per bunch
can we let interact with the
window frame or surrounding
material?

- 1% $\rightarrow r \approx 7$ mm
- 10% $\rightarrow r \approx 5$ mm
- 50% $\rightarrow r \approx 2.5$ mm



- LCODE simulated beam at first plasma exit as input in FLUKA
- Vary the entrance radius and observe the deposited energy outside the source



10 cm away from the source

Vacuum window size	Deposited energy [eV/cm ³]	Dose rate [Sv/h] (rep. rate 1/30 Hz)
r = 0.7 mm	5E-2	456
r = 0.5 mm	7.5E-2	672
r = 0.25 mm	10E-2	888

↓
Acceptable?
Too high?

Next:

- Repeat the simulations and check radiation ~ 1 m away from the source (compare to old simulation studies for Run1)
- Define window size
- Define window thickness
- Define beamline parameters

