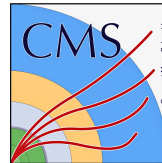




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# Forward Muon Detector Studies

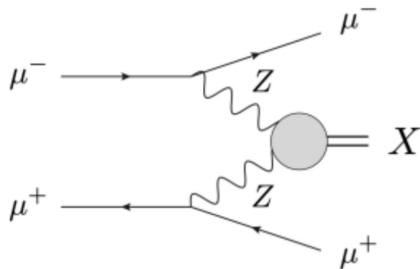
Kiley with help from Daniele and Ben  
(Working Documentation Slides)

# Forward Muon Tagging Goals

- VBF final states:

- $WW \rightarrow \nu\nu + X$

- $ZZ \rightarrow \mu\mu + X$

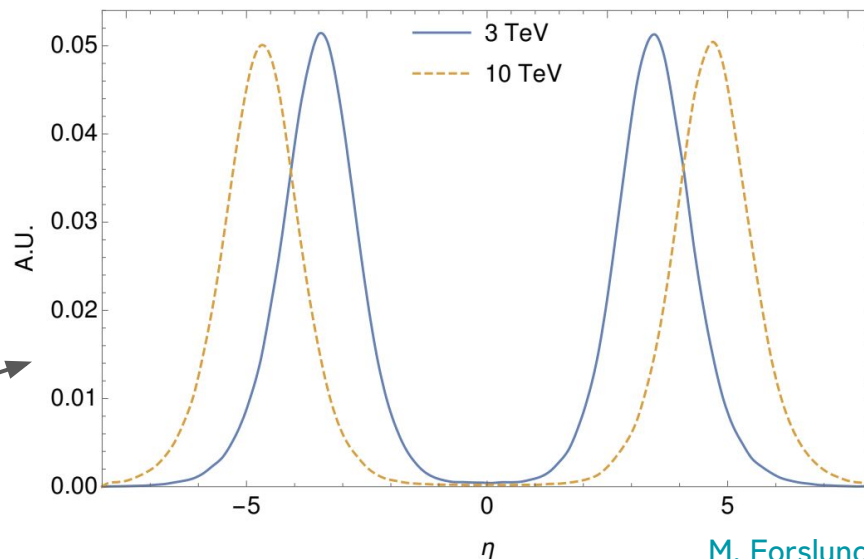


- To distinguish between WW and ZZ VBF processes, must be able to tag very forward muons

- Goal: have sensitivity to  $\eta$  in  $[3, 6]$

- $\theta = [0.1, 0.005]$  rad

- $\theta = [5.7, 0.3]$  deg

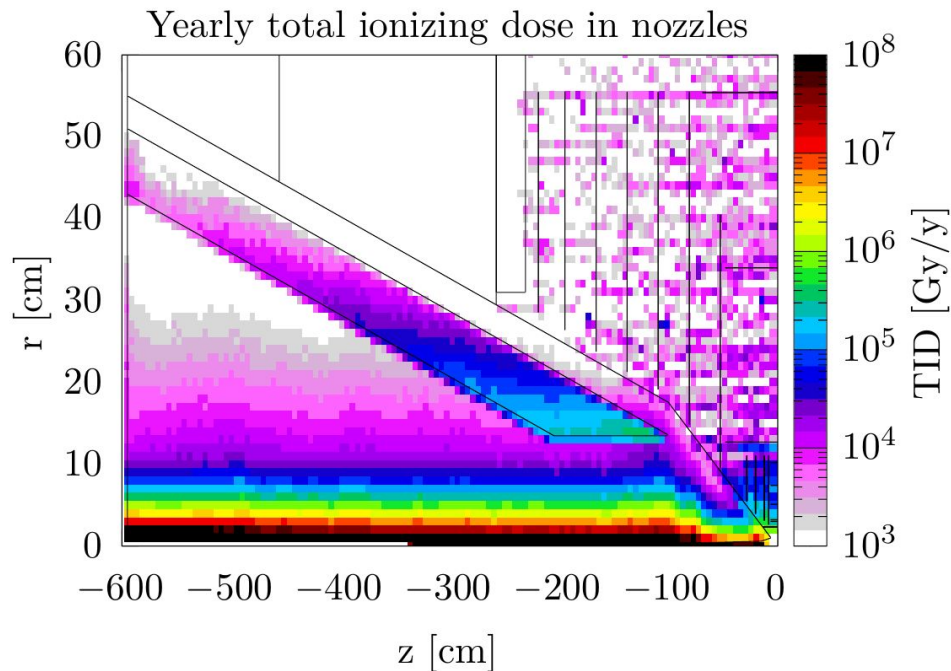


[M. Forslund](#)

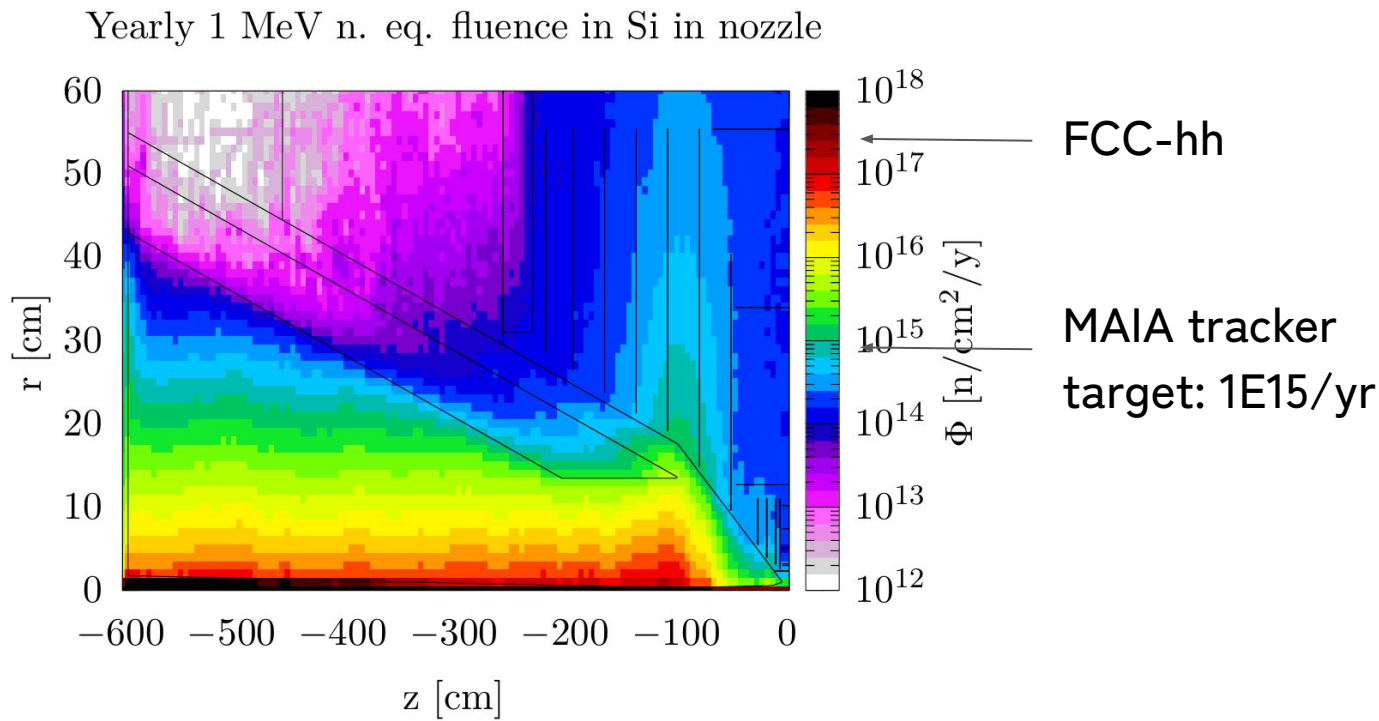
# Radiation Challenges Close to Beam

TID  $\rightarrow$  lifetime  $< 1$  year for detectors within 5-15 cm of beam

[https://indico.cern.ch/event/1514335/contributions/6372170/attachments/3013002/5312901/MDI\\_update\\_Feb25.pdf](https://indico.cern.ch/event/1514335/contributions/6372170/attachments/3013002/5312901/MDI_update_Feb25.pdf)

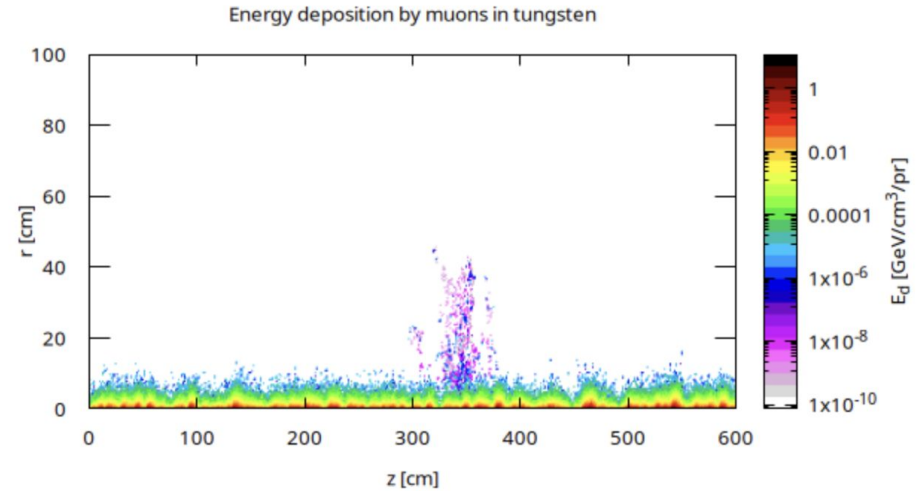
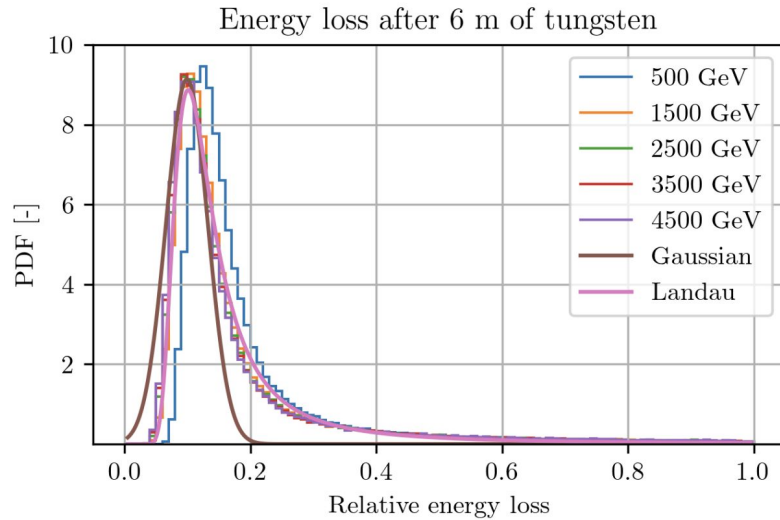


# Fluence



# Muon Energy Losses In Materials

[https://indico.cern.ch/event/1307798/contributions/5501297/attachments/2697097/4680867/colliders\\_of\\_tomorrow\\_MDI\\_Calzolari.pdf](https://indico.cern.ch/event/1307798/contributions/5501297/attachments/2697097/4680867/colliders_of_tomorrow_MDI_Calzolari.pdf)



# Ok so where do we need to put this thing

- Proposals:

- Track stubs at  $Z=6\text{m}$  (min radius 5 cm)
- Track stubs at  $Z=4\text{m}$ , (min radius 5 cm),  $Z=6\text{m}$  (min radius 5 cm)

