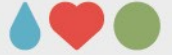


# Carbon Beam Imaging

Viljar Nilsen Eikeland  
pCT collaboration  
University of Bergen





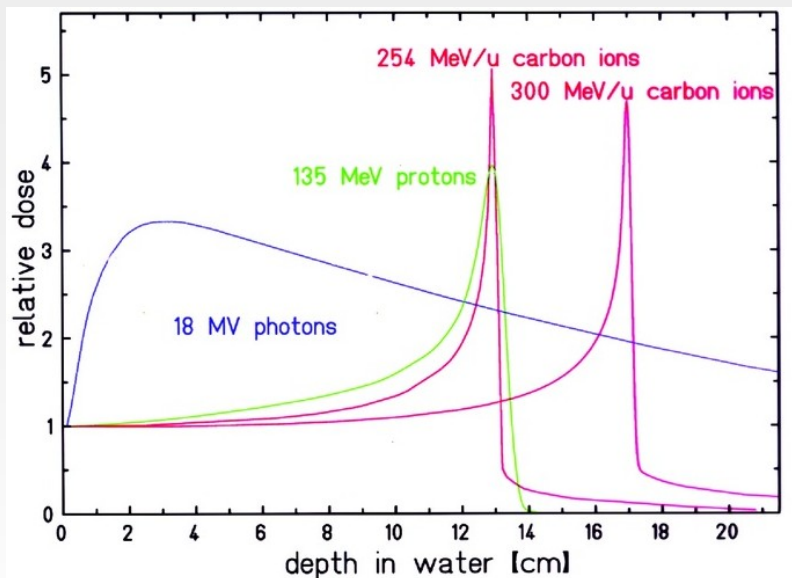
# Overview

- LET for protons and carbons
- Generation of clusters
- Correlation between LET and Cluster Size
- Beam Test HIT (December 2018)





# Dose depth curves



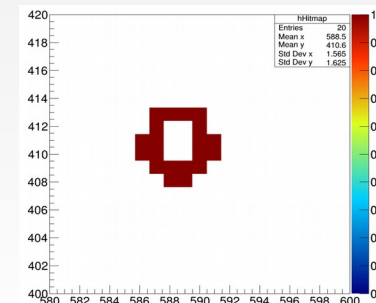
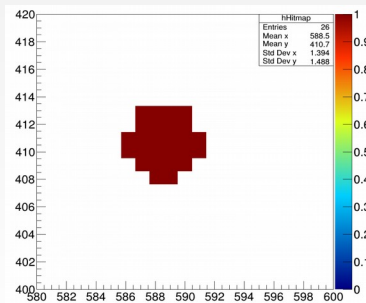
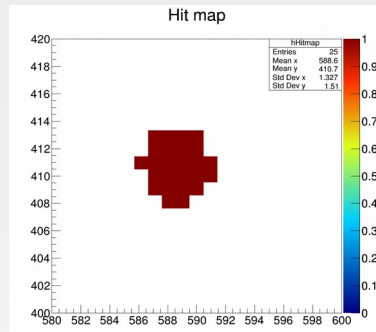
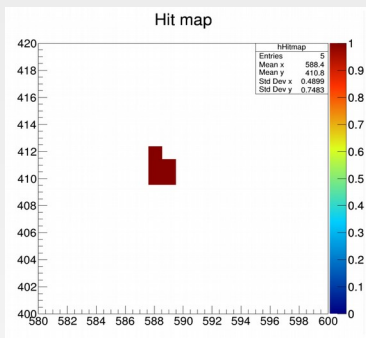
Depth-dose profiles of radiotherapy beams like photons, protons, and carbon ions.

Weber & Kraft  
The Cancer Journal15(4):325-332, July-August 2009.





# Generation of clusters

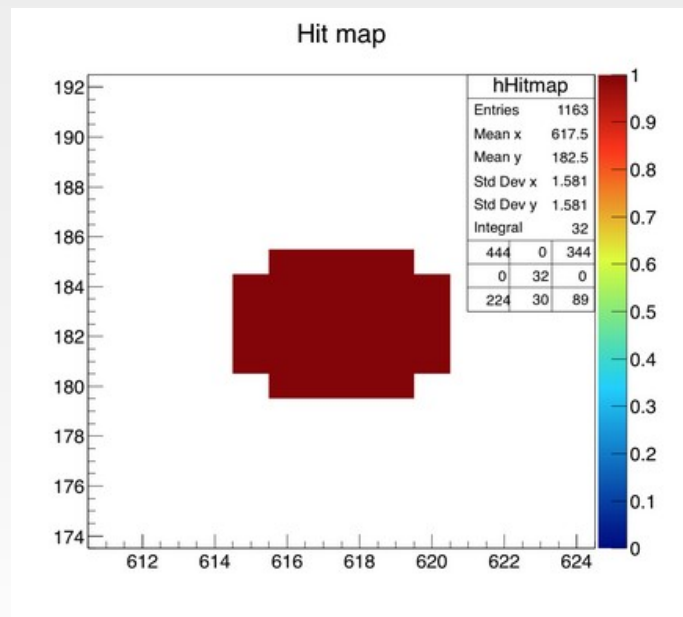
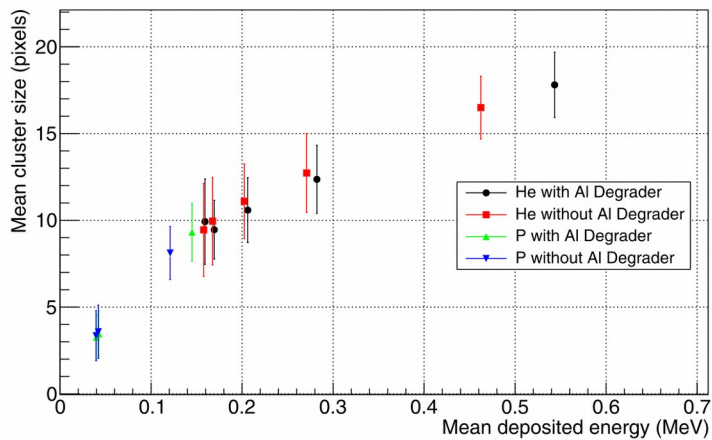


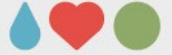
Charge spreads in sensitive layer, before being collected by collection diode.



# Clusters

- Correlation between LET and Cluster Size

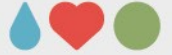




## HIT Beam Test (December 2018)

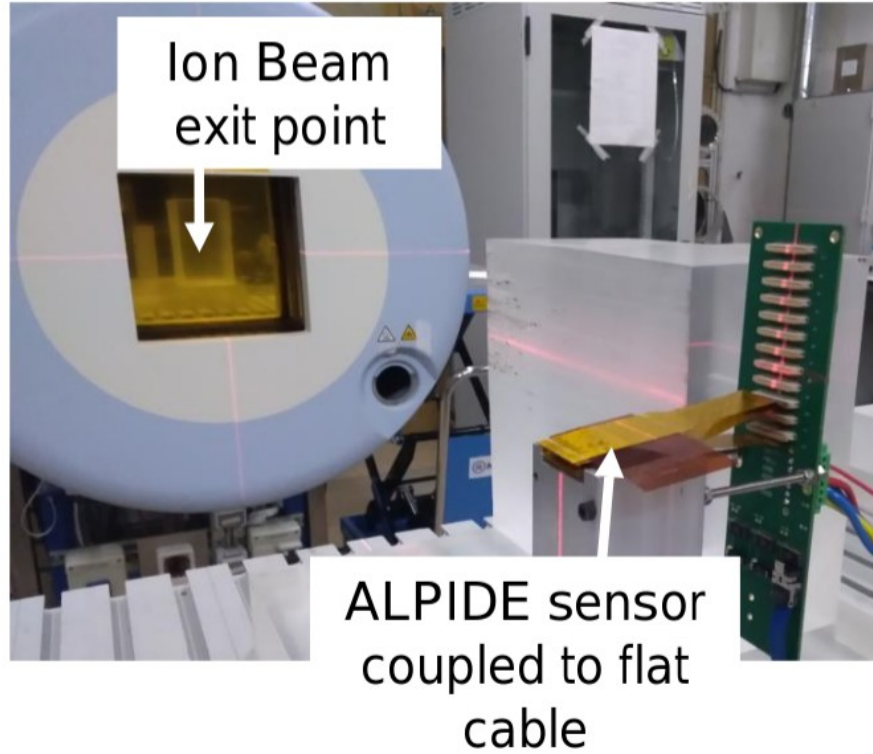
- Effect of Cluster size with increasing LET
- Effects of high occupancy on ALPIDE
- Lateral scan of ALPIDE, in order to capture tracks and locate Bragg-peak.
- Evaluate possibility of using ALPIDE in microdosimetry

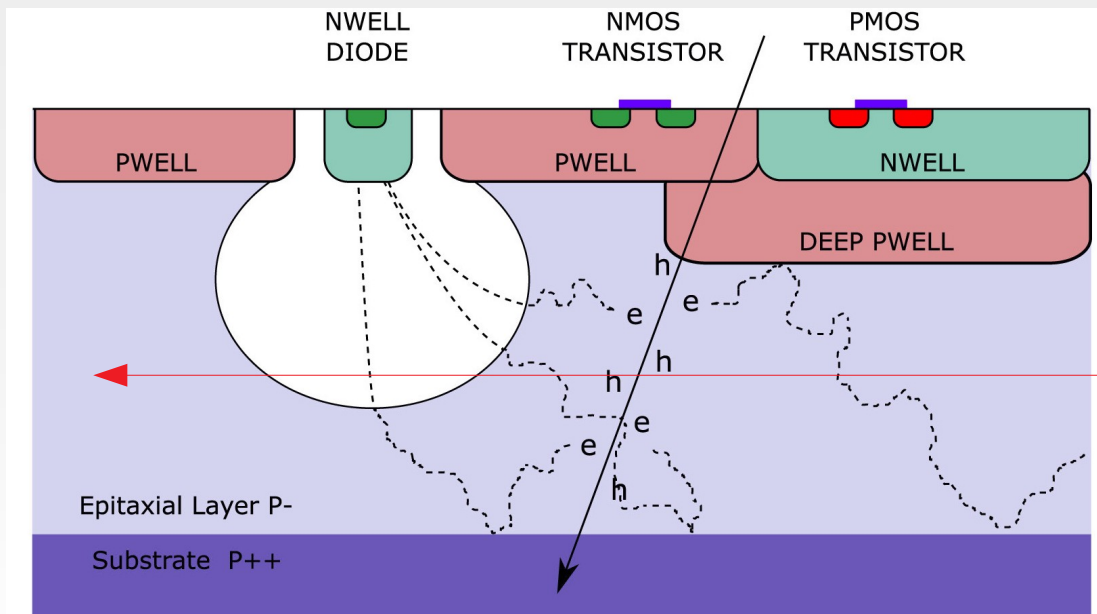




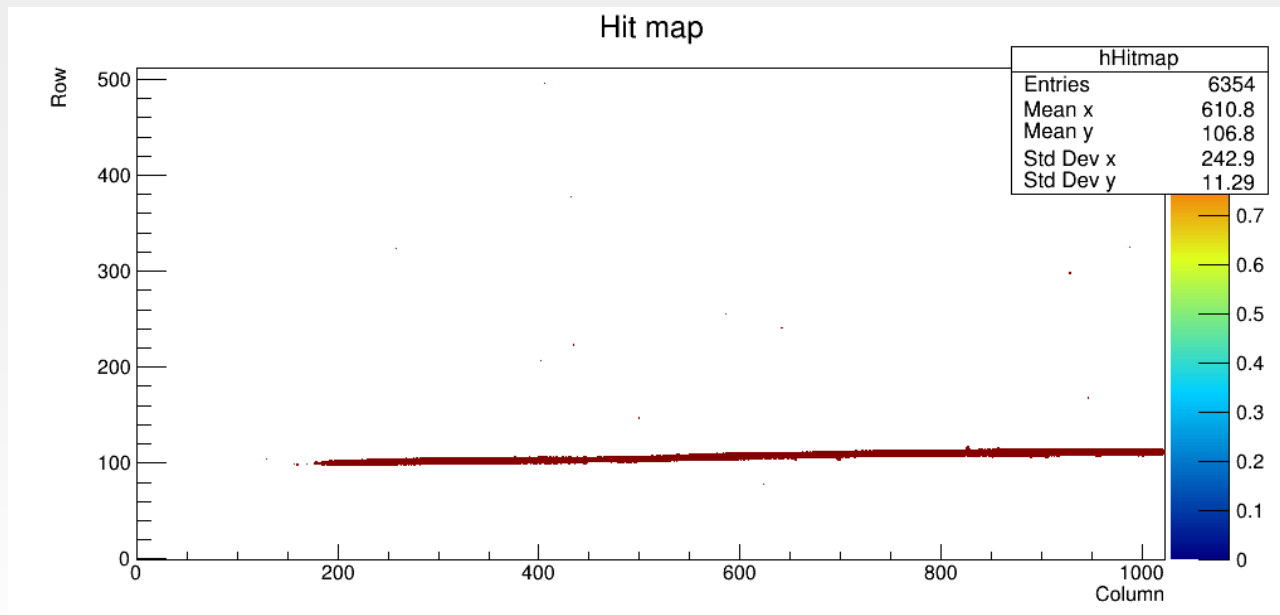
# Setup

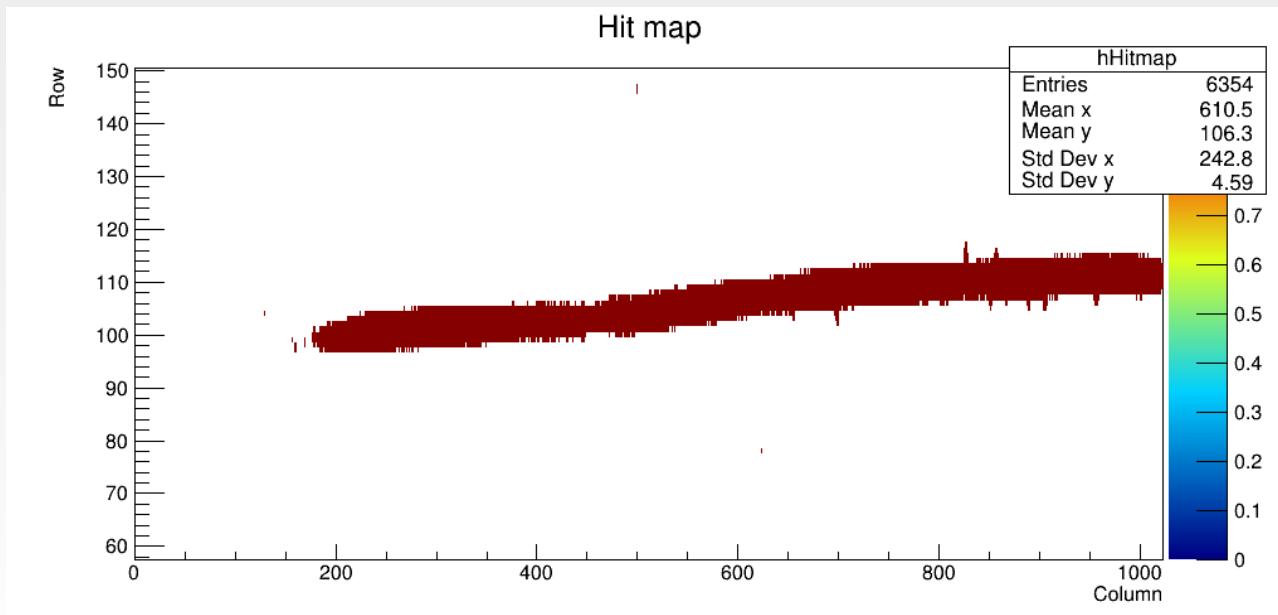
E=140.4 MeV/U Carbon  
beam





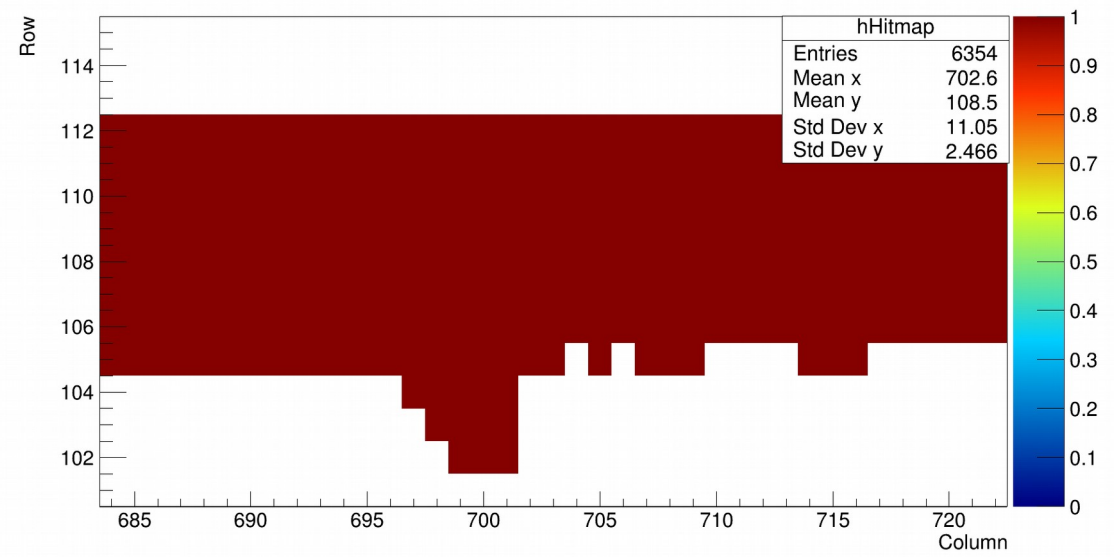


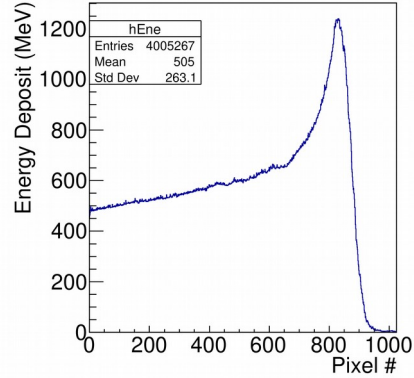
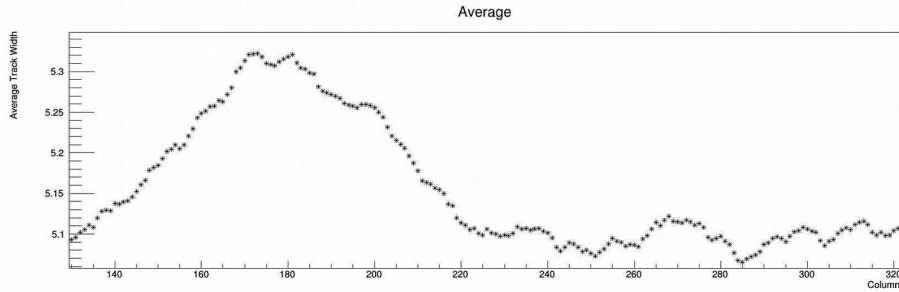
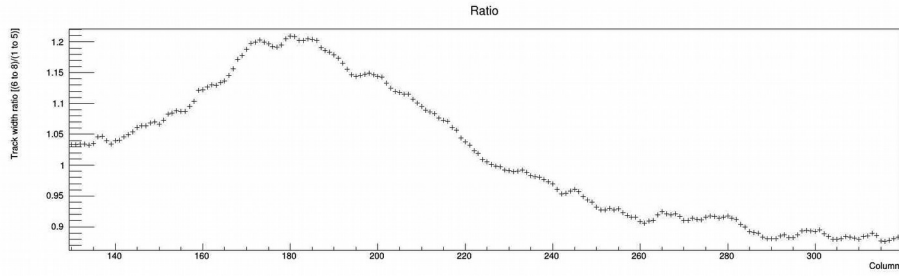
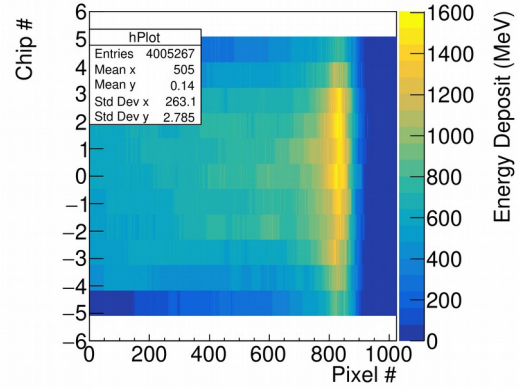


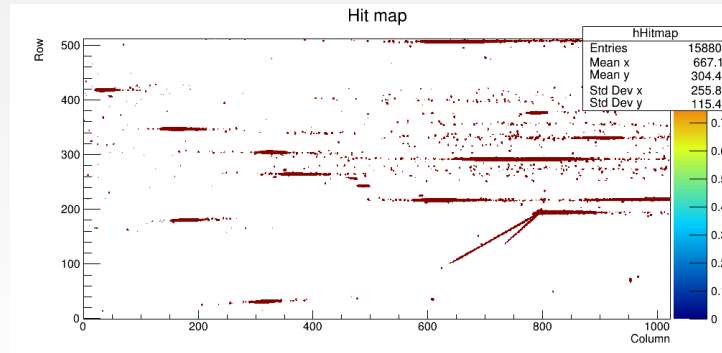
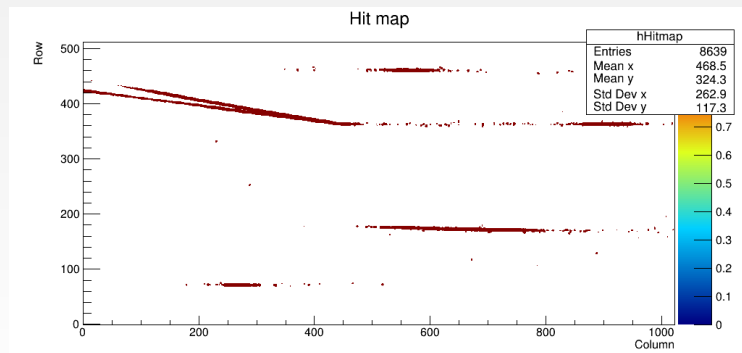
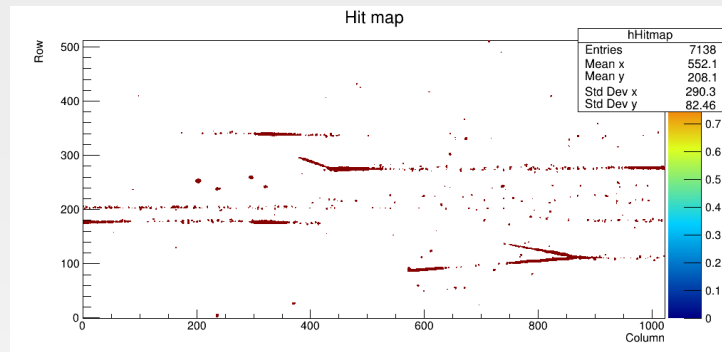
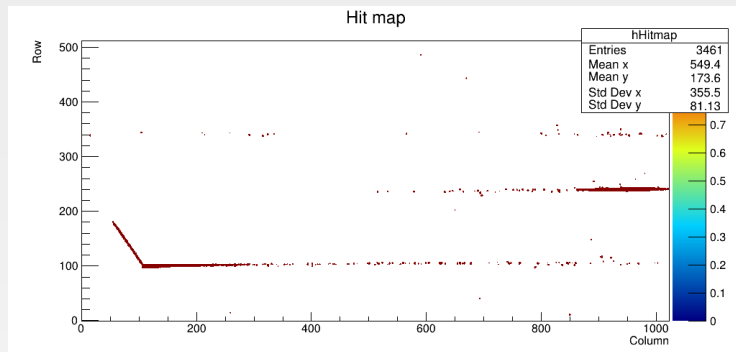


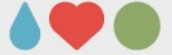


Hit map









# Conclusion

- Nuclear interactions are observed in the ALPIDE
- A stack of ALPIDEs may be used as a microdosimeter if the distance between the ALPIDEs can be kept at a minimum





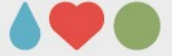
# Questions?



UNIVERSITY OF BERGEN







# Backup



