

# UCN Storage Experiment

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T. Yoshioka, H. Otono, H. Oide, H. Hano,

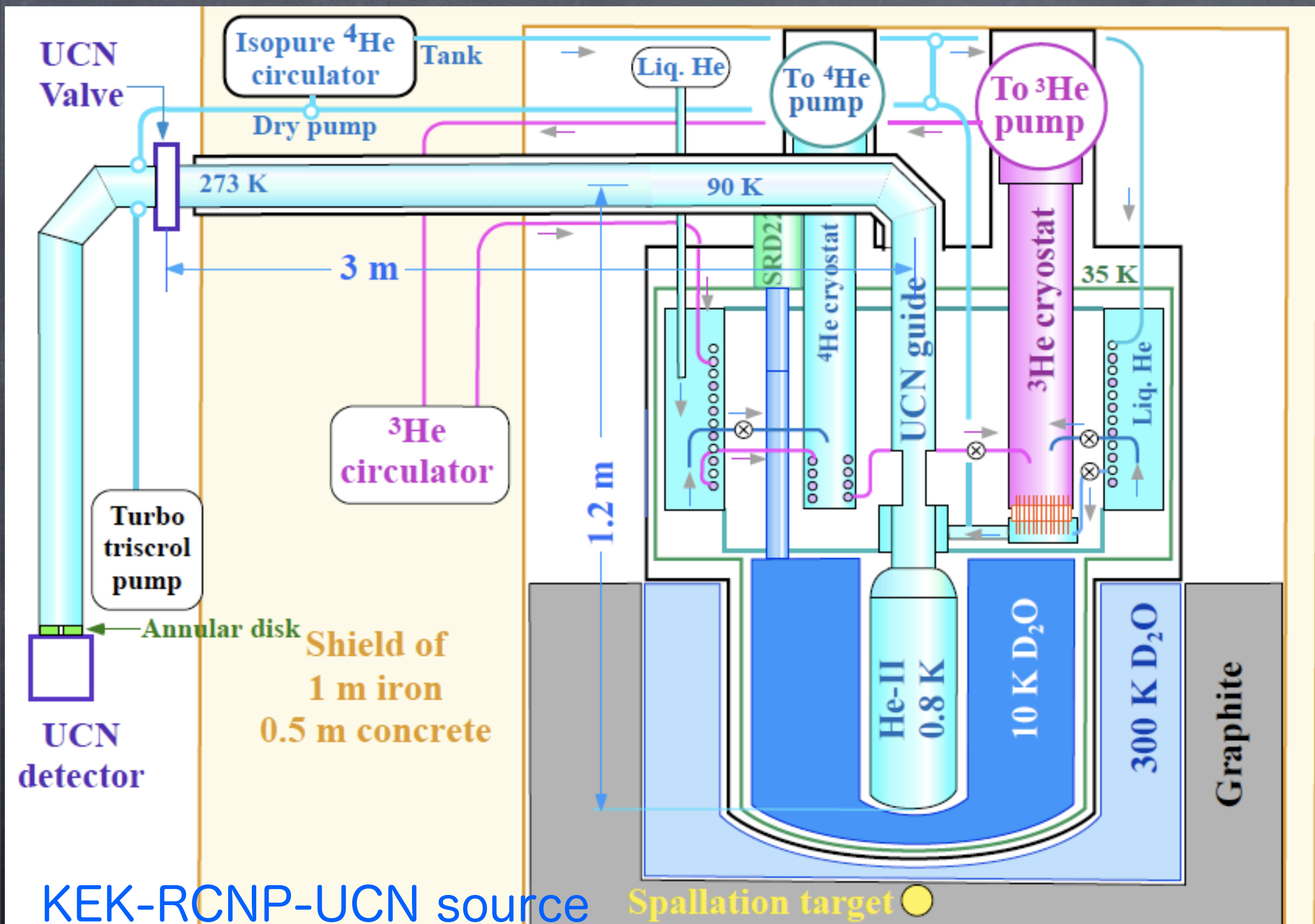
T. Suehiro, Y. Hisamatsu, S. Yamashita, ICEPP

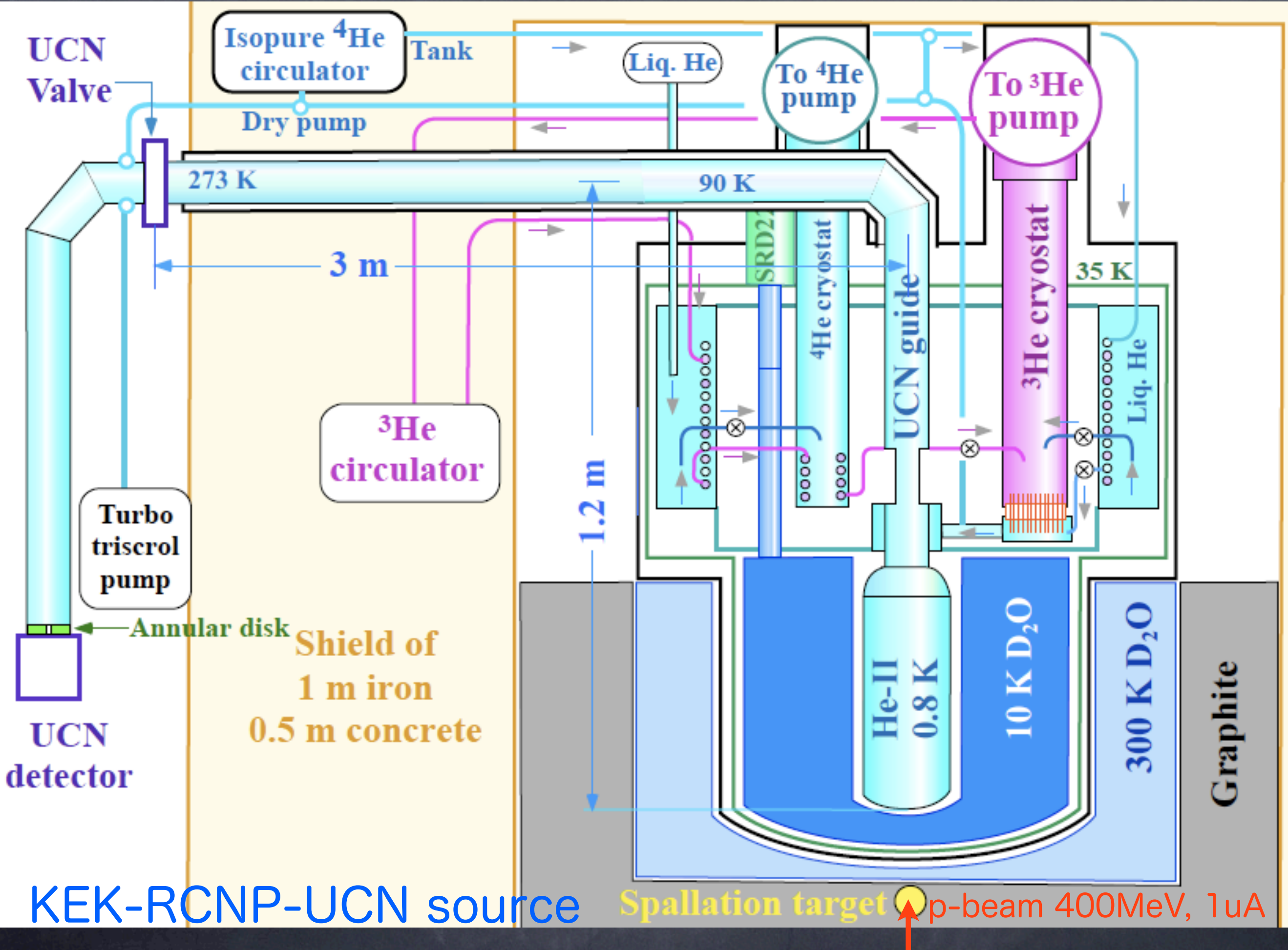
A. Holly, G. Palmquist, R. Golub, E. Korobkina, NCSU

## OUTLINE

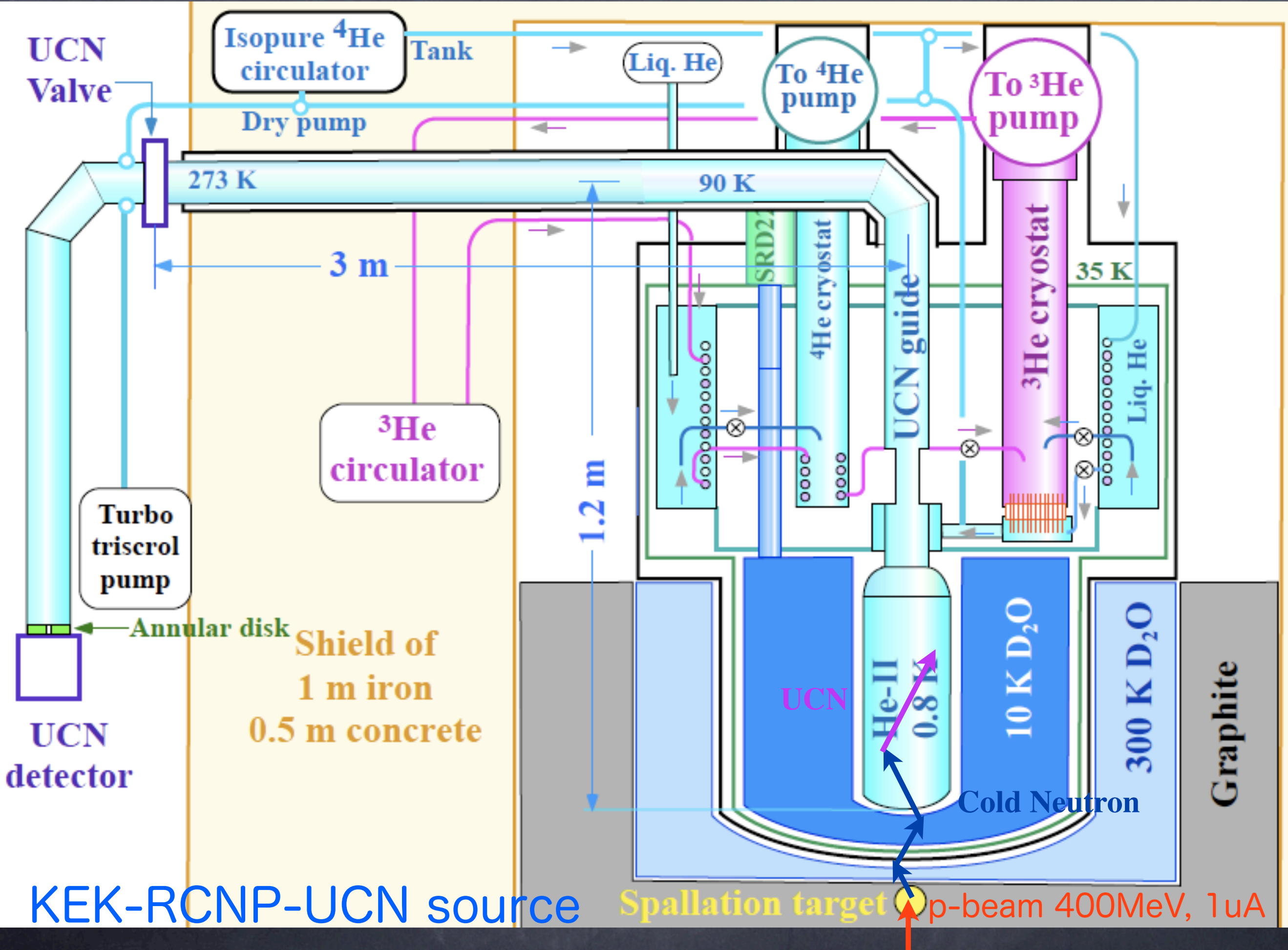
- UCN Production Experiment
- UCN Storage Experiment & UCN Energy spectrum
- Geant4 simulation







KEK-RCNP-UCN source



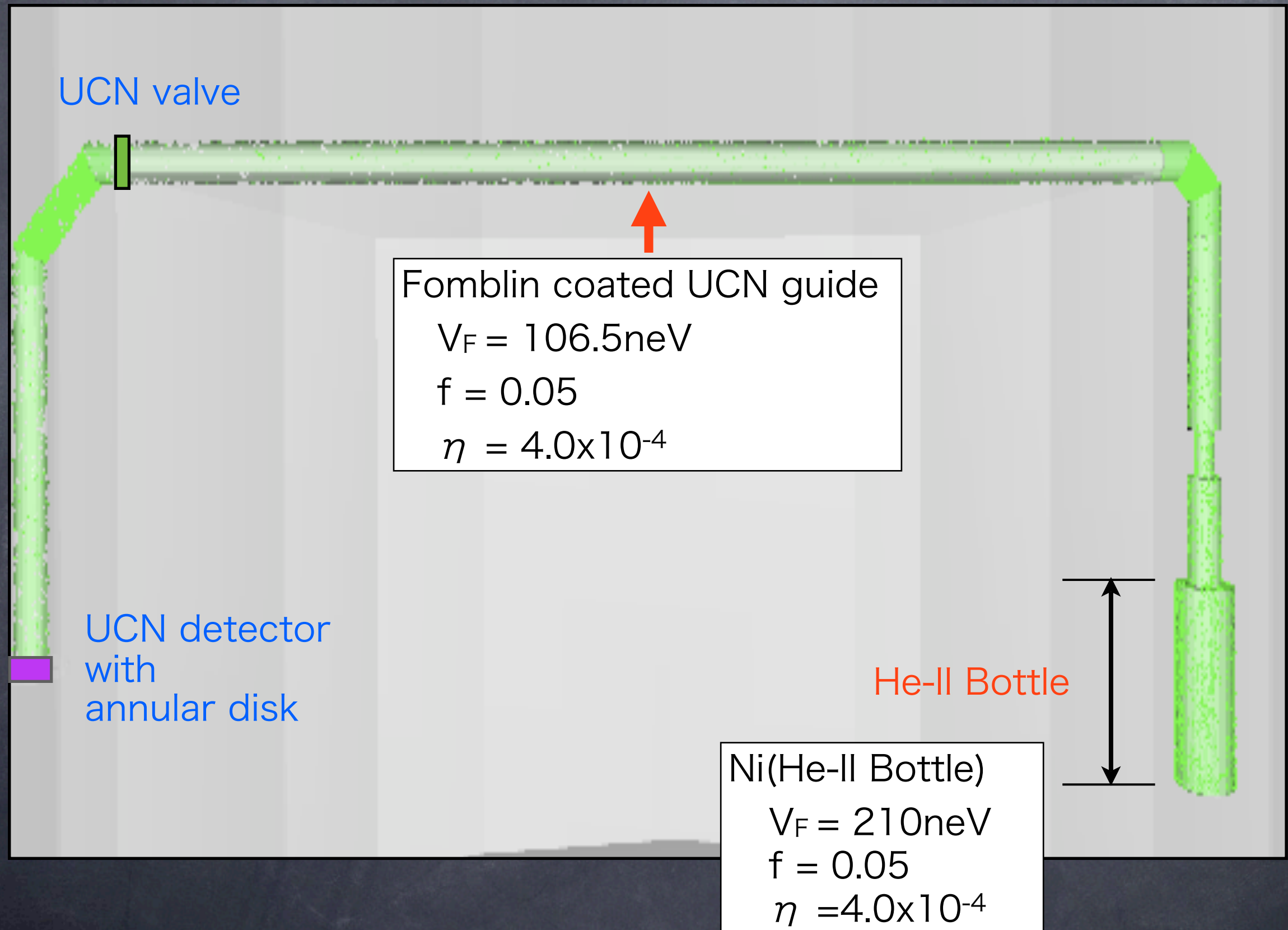




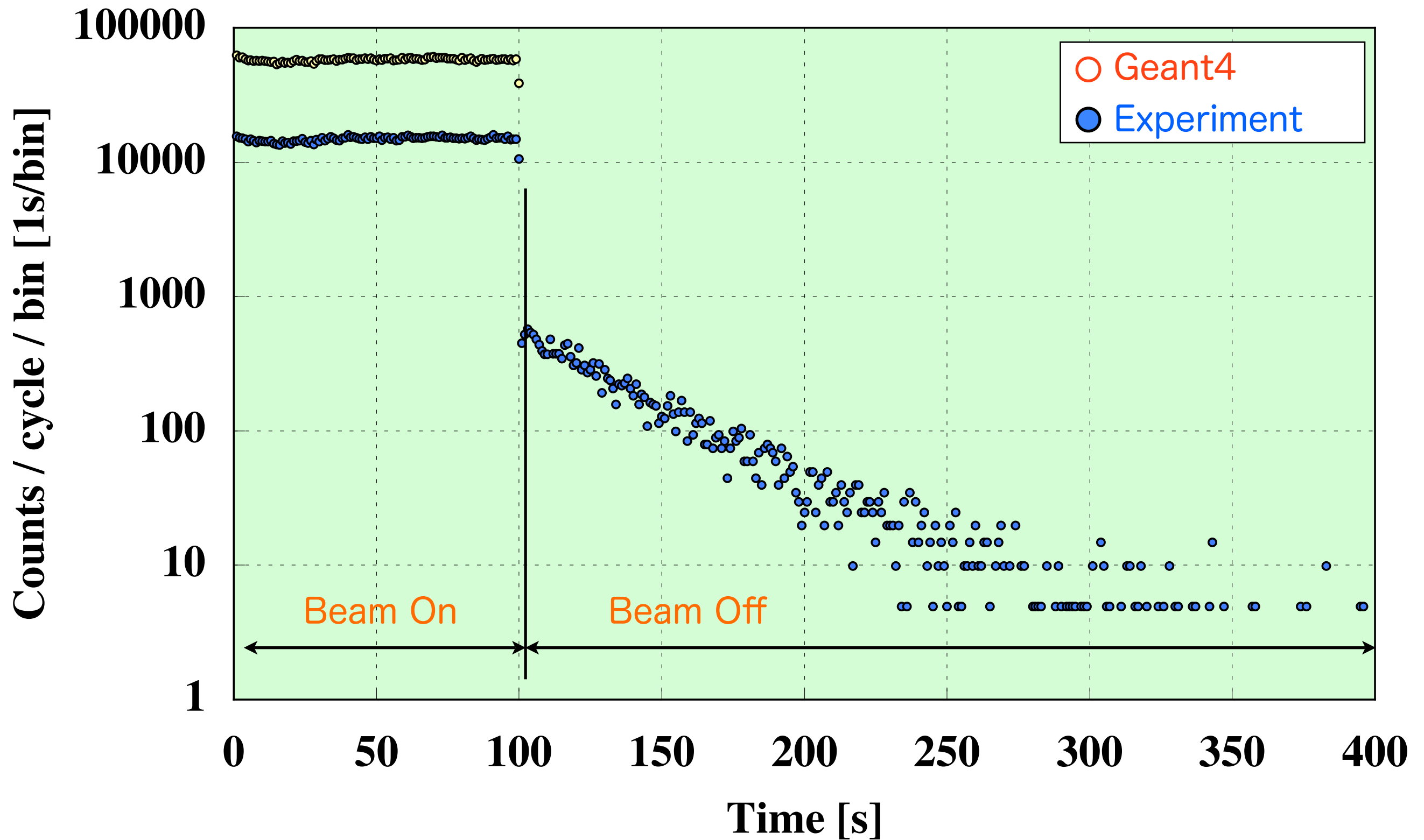




# Geant4 - UCN source geometry

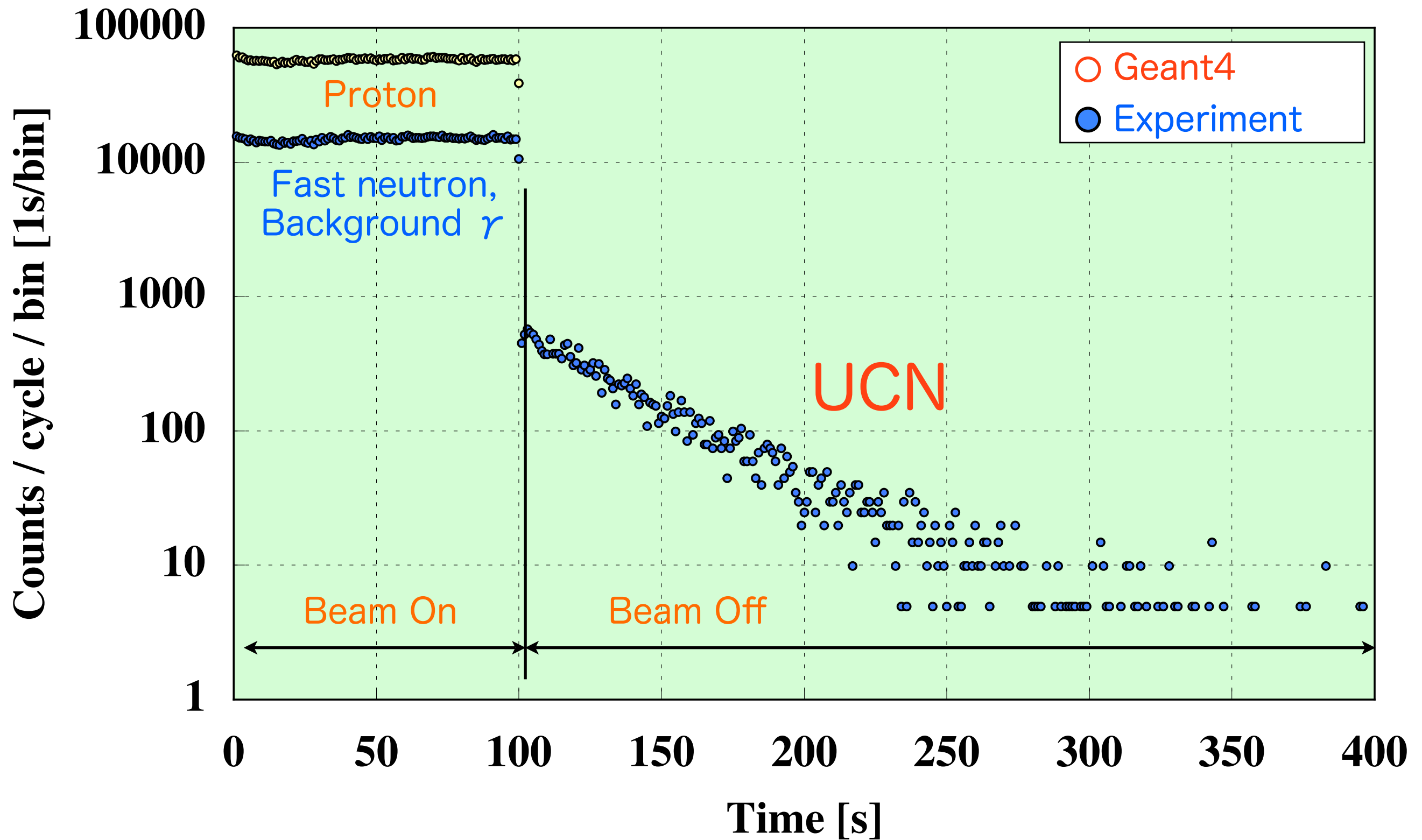


# UCN production @ 1uA p-beam

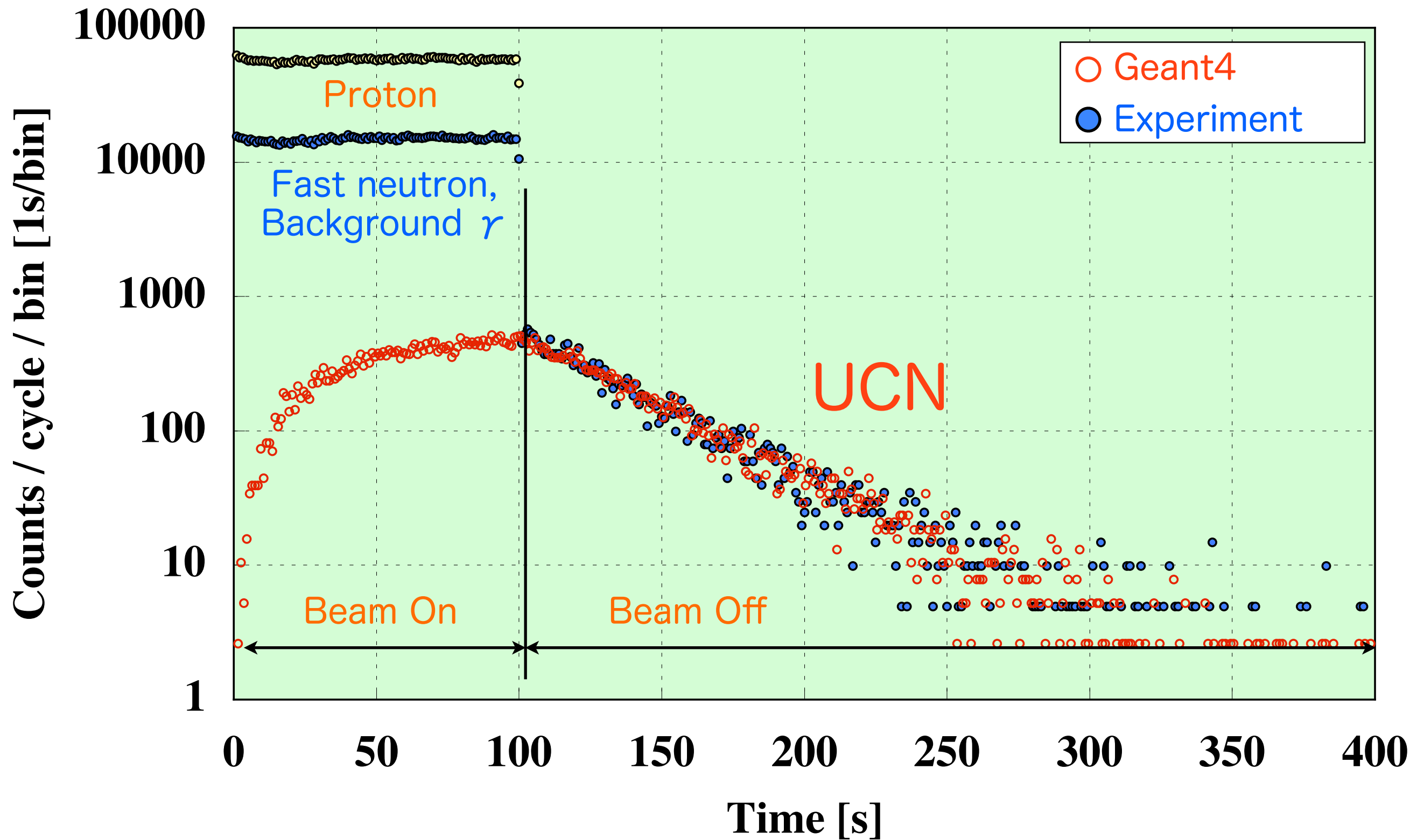




# UCN production @ 1uA p-beam

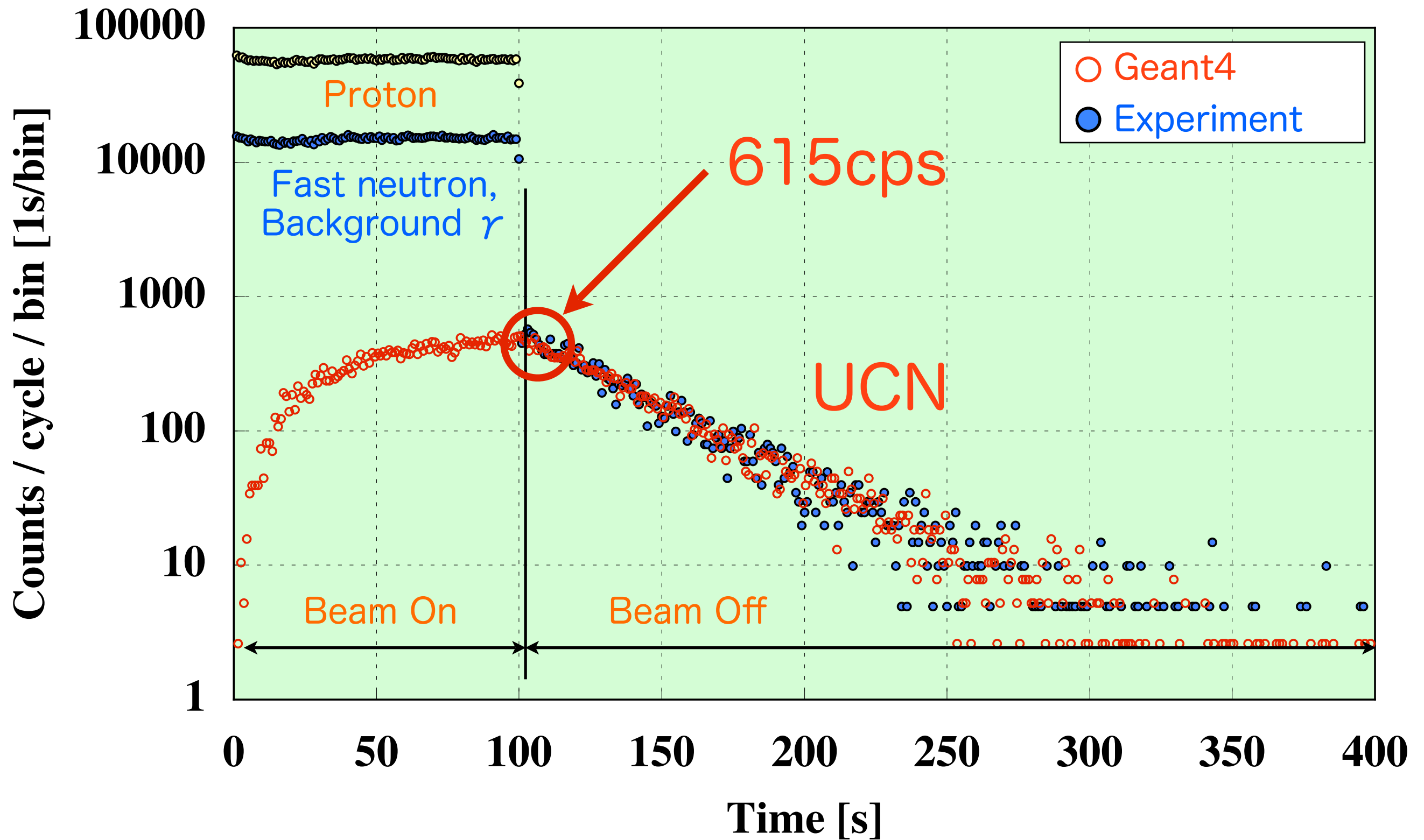


# UCN production @ 1uA p-beam

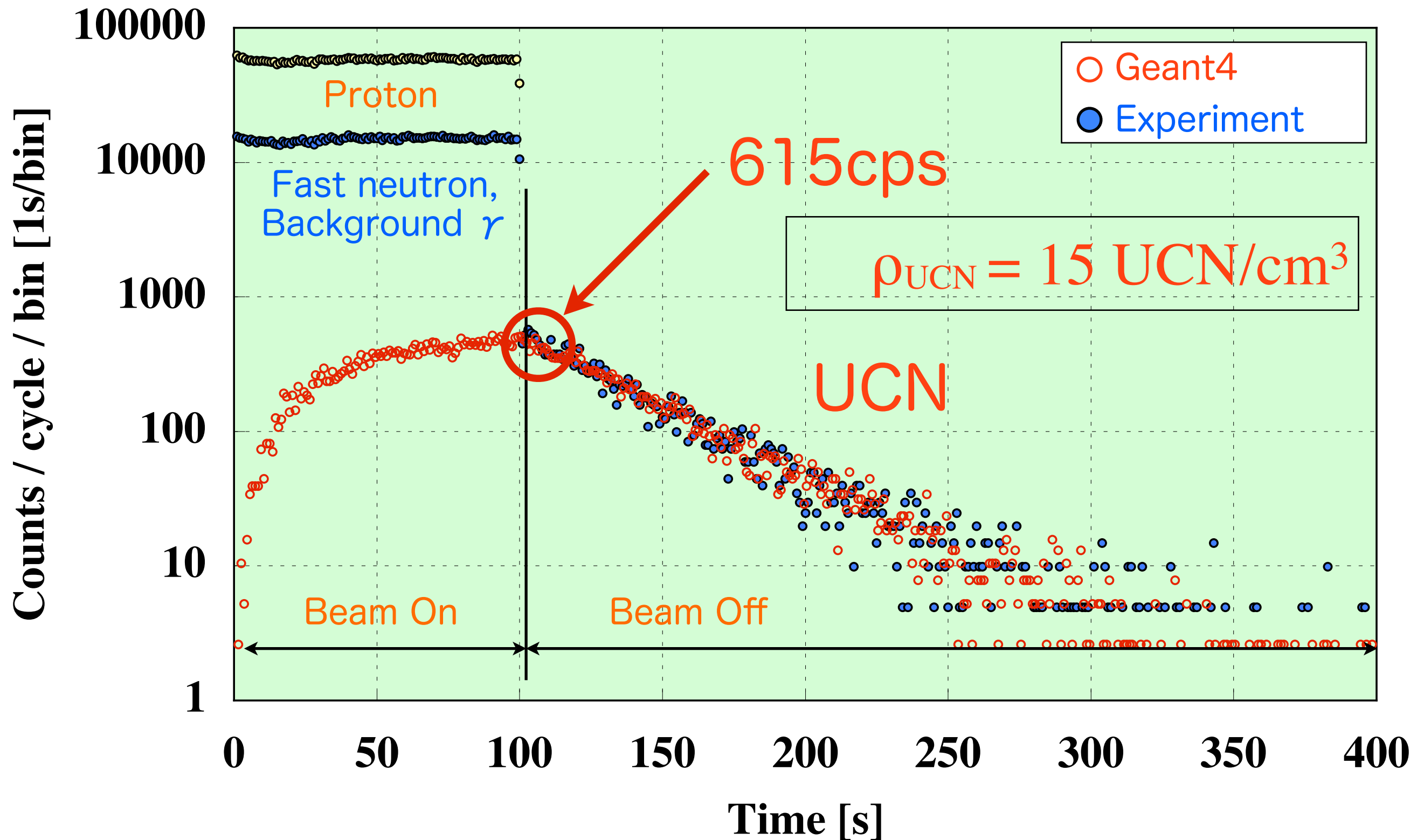




# UCN production @ 1uA p-beam

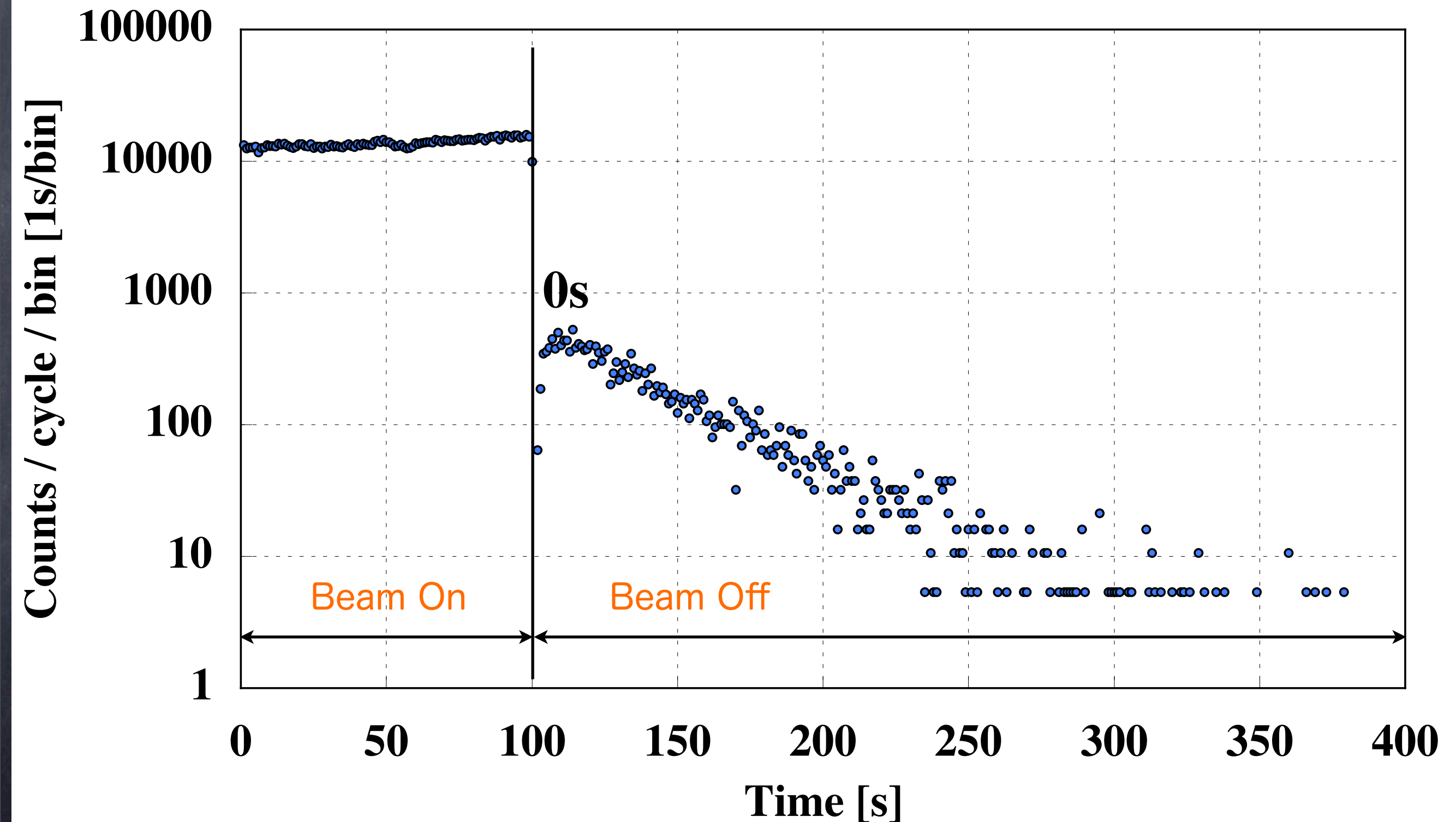


# UCN production @ 1uA p-beam

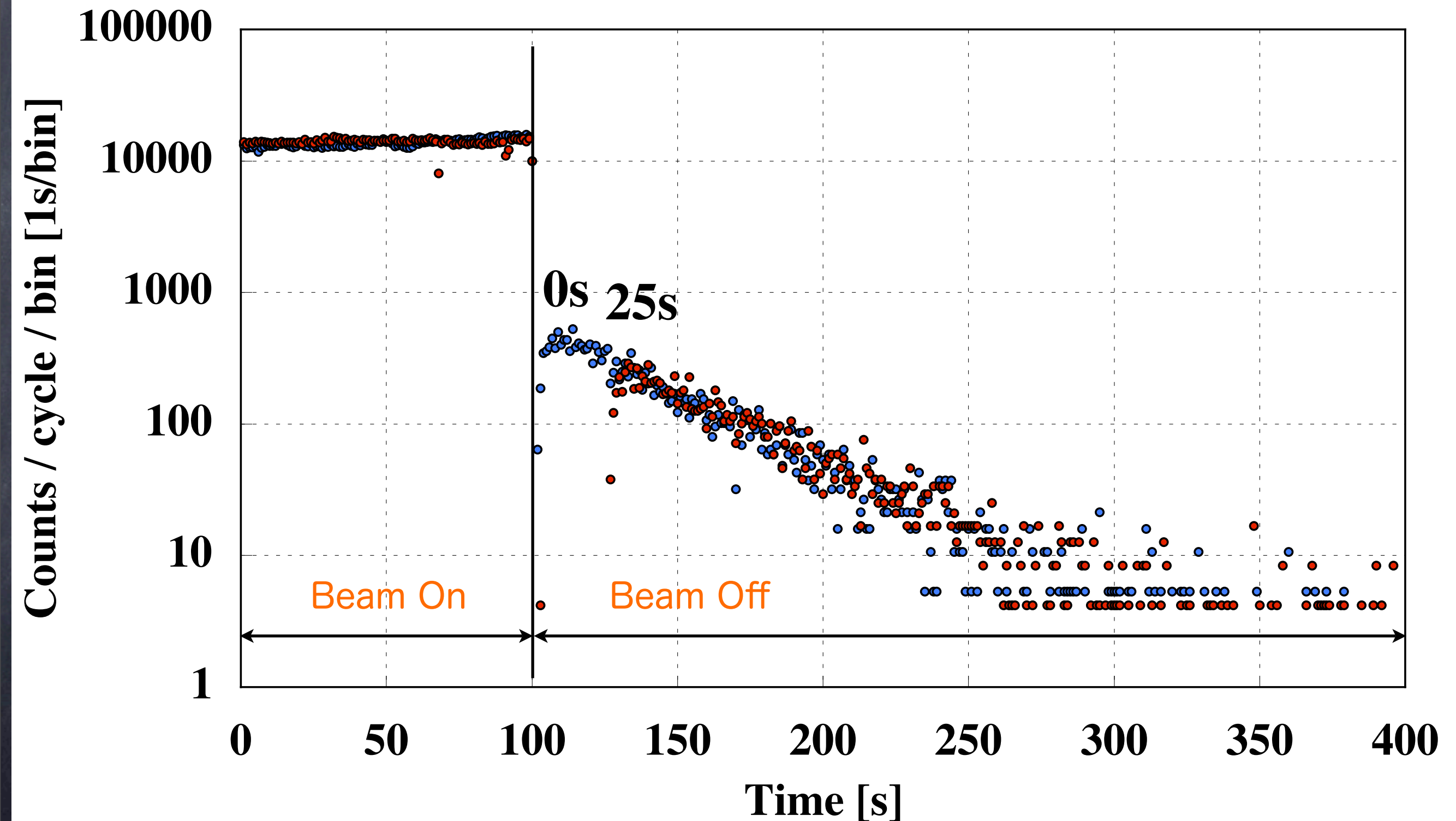




# Delay mode

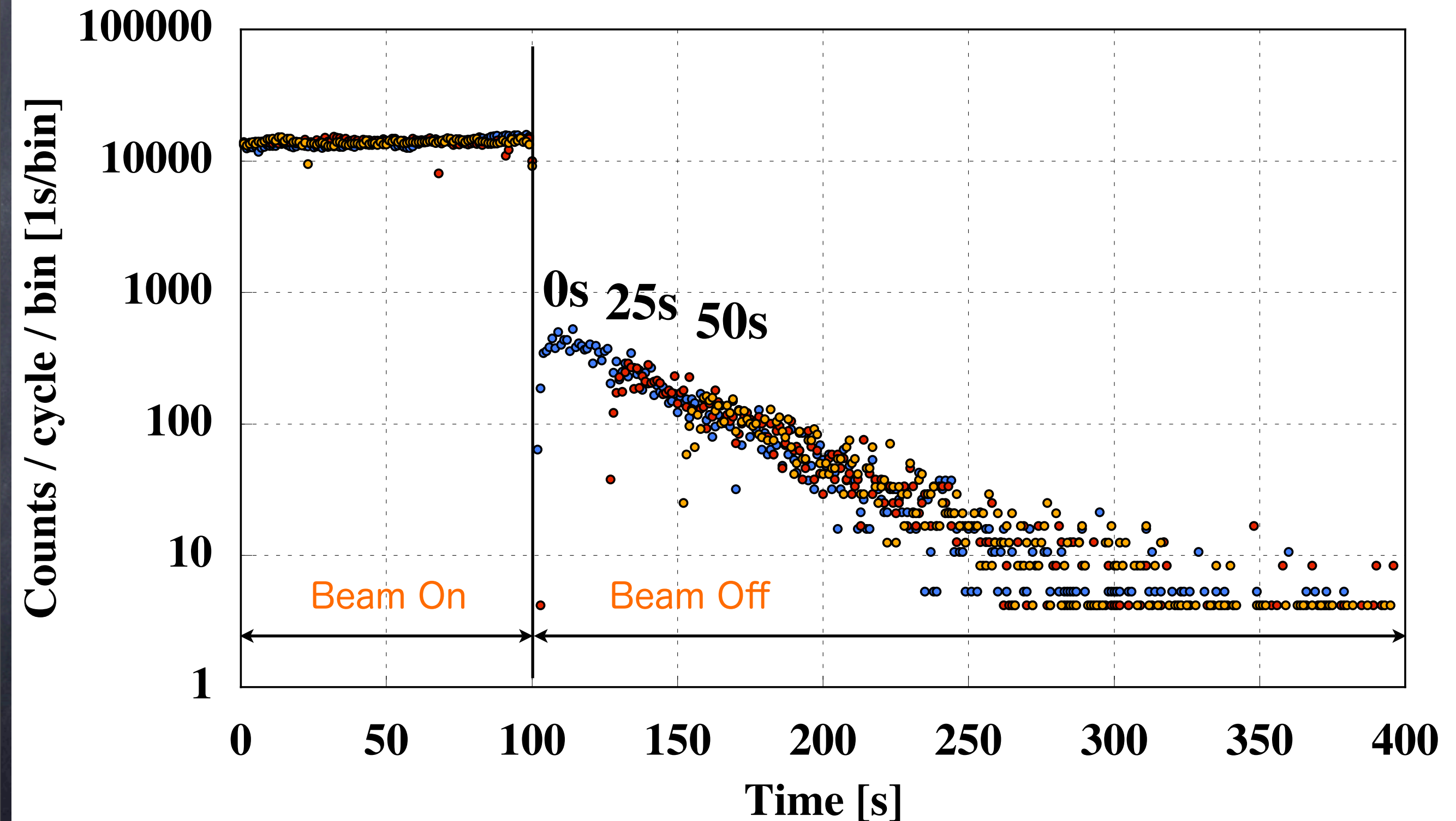


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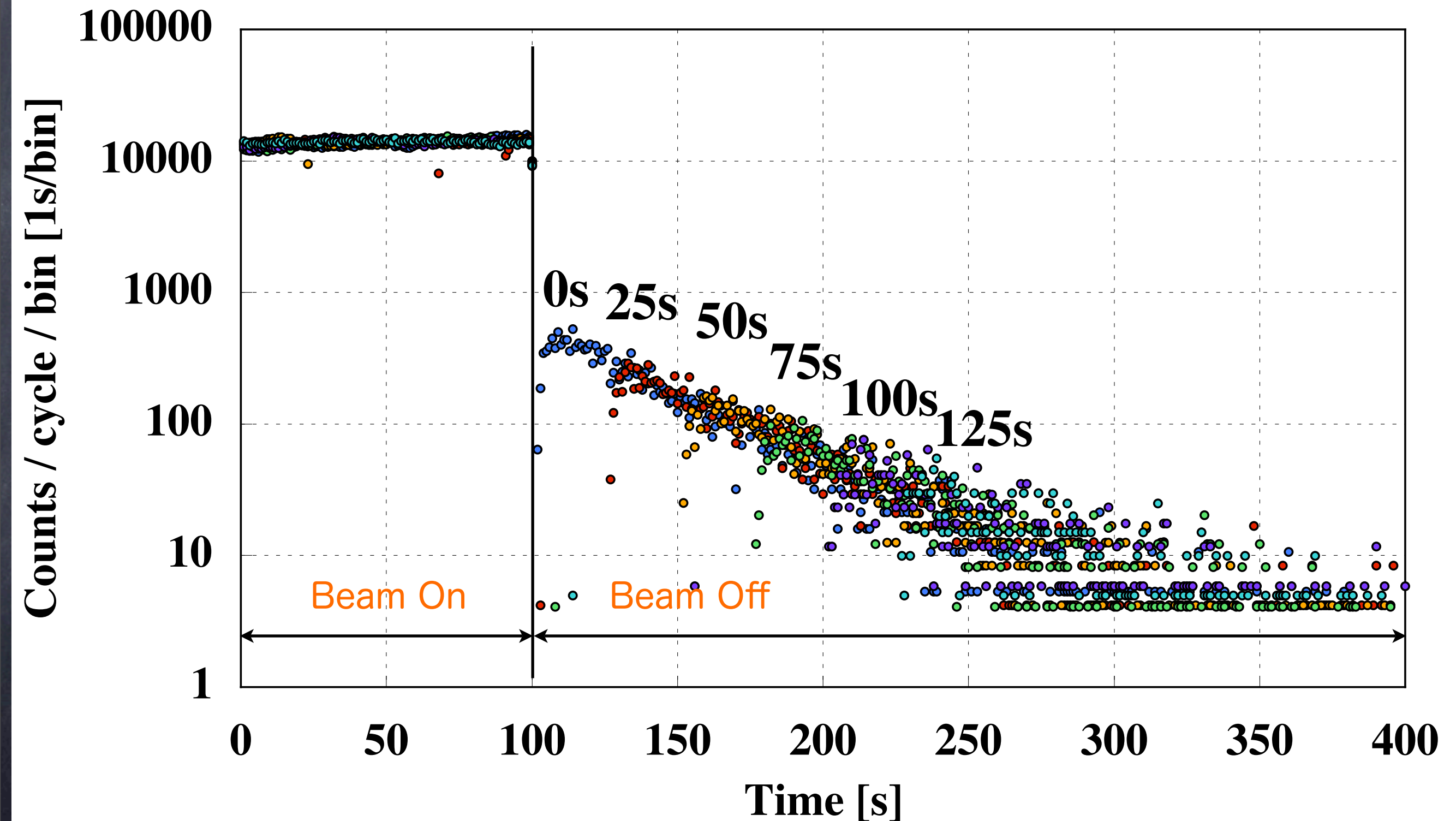




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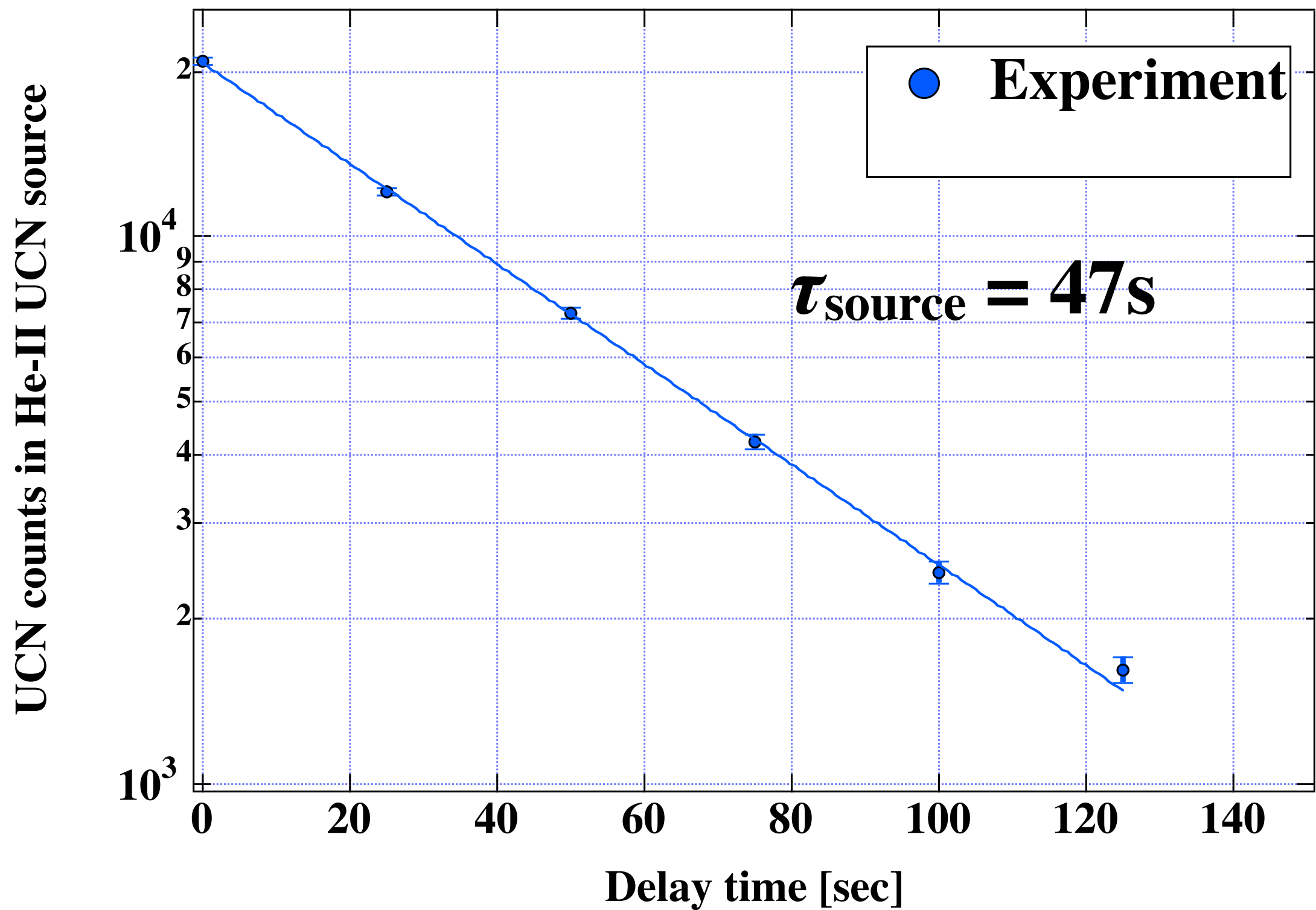


# Delay mode

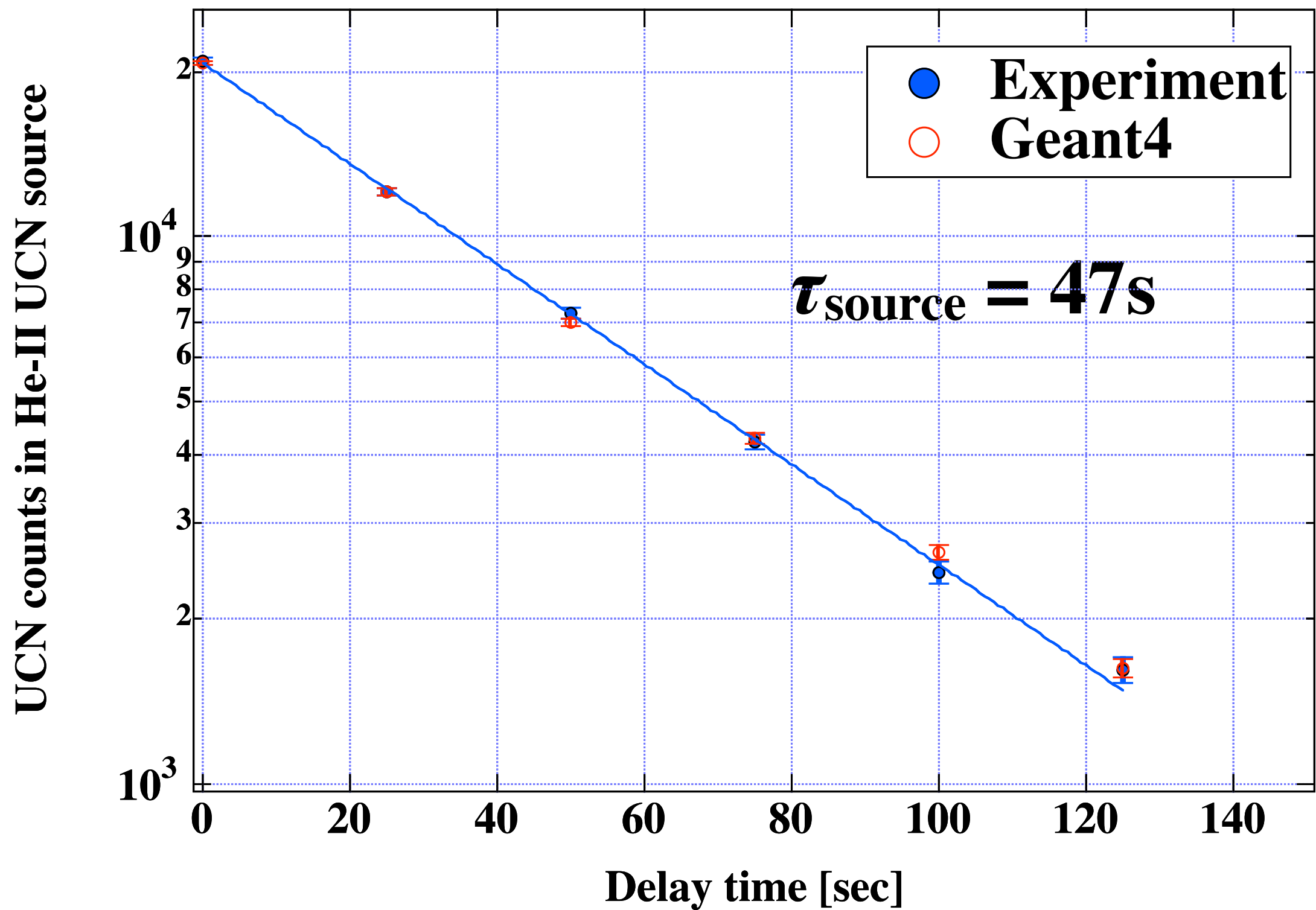




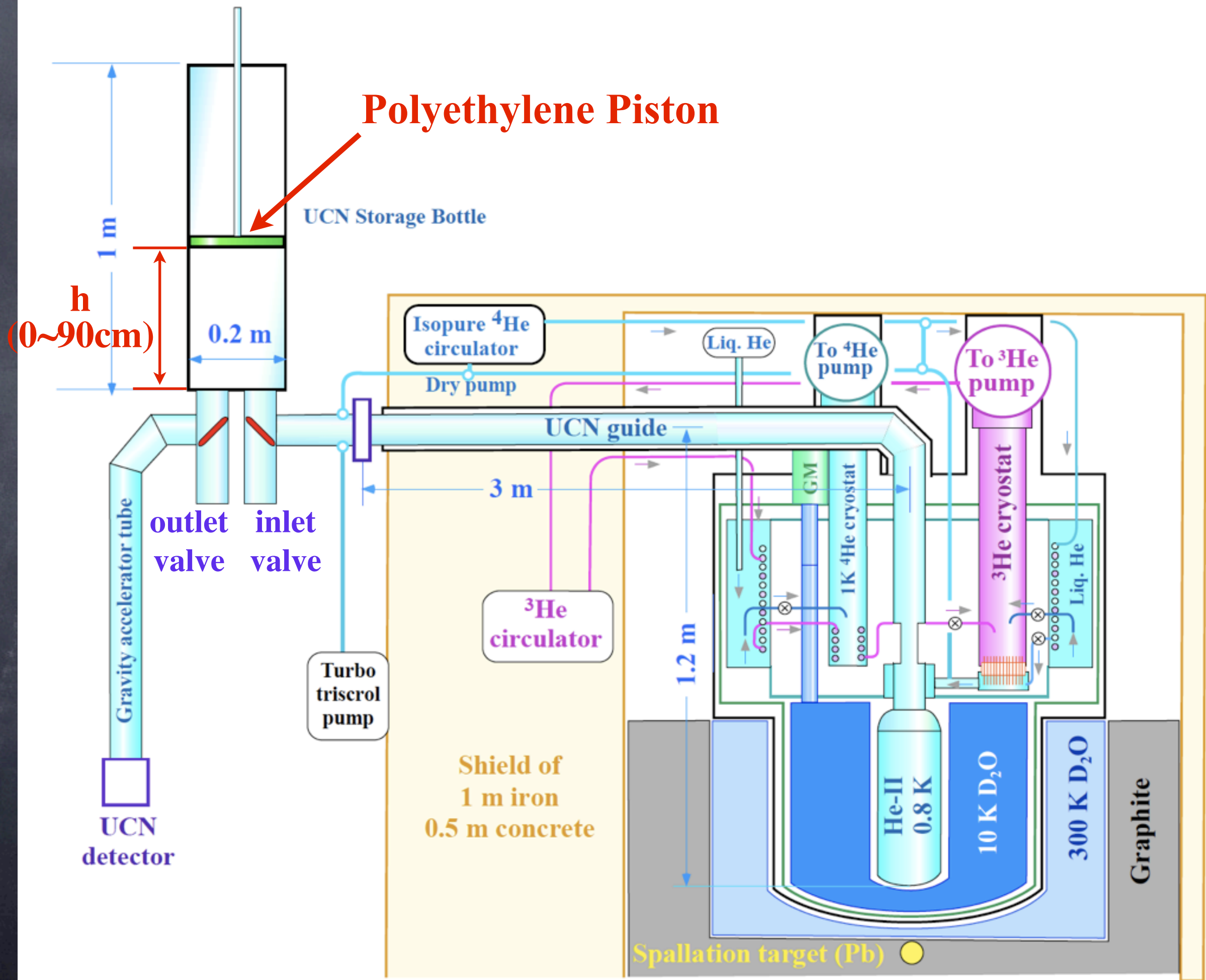
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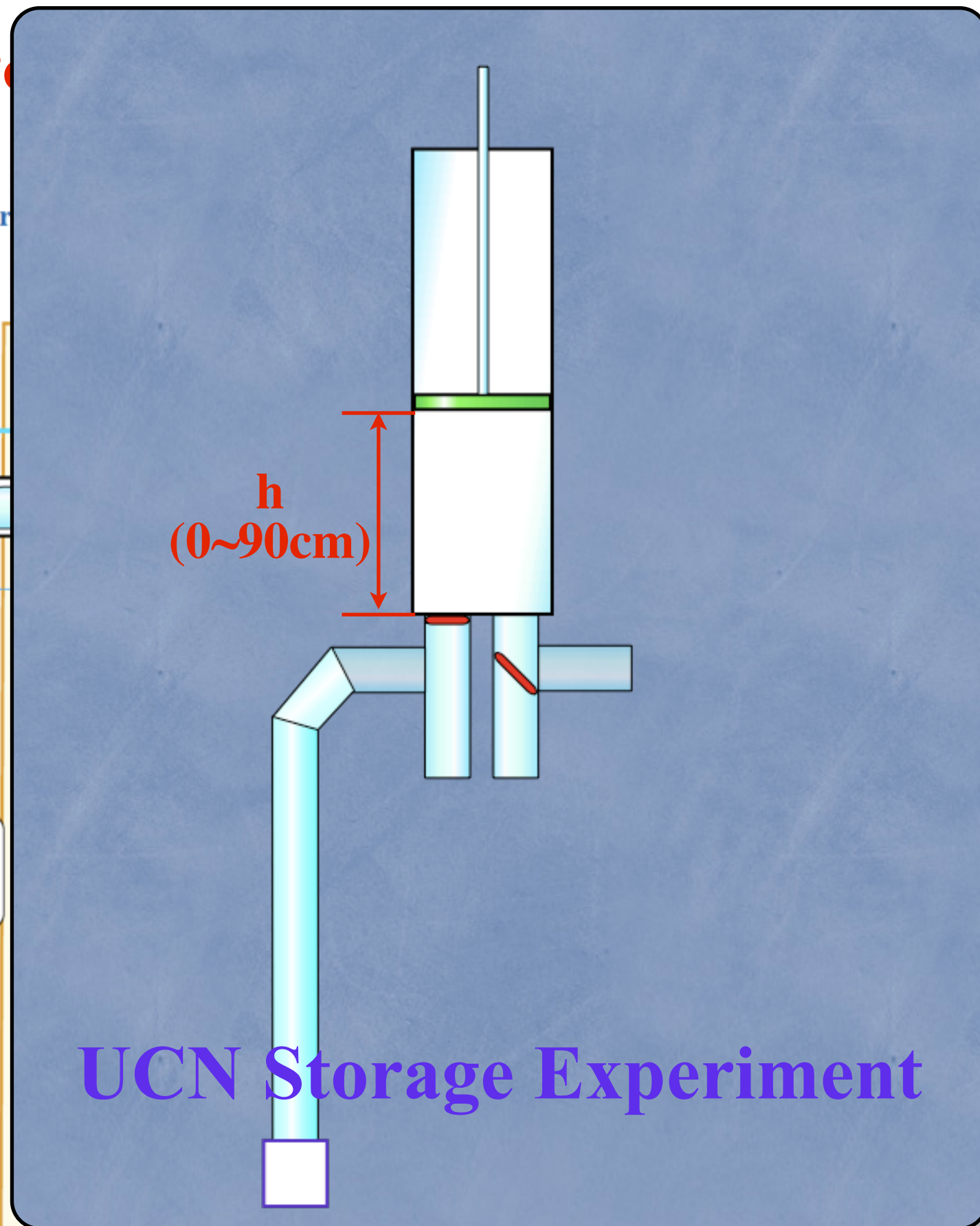
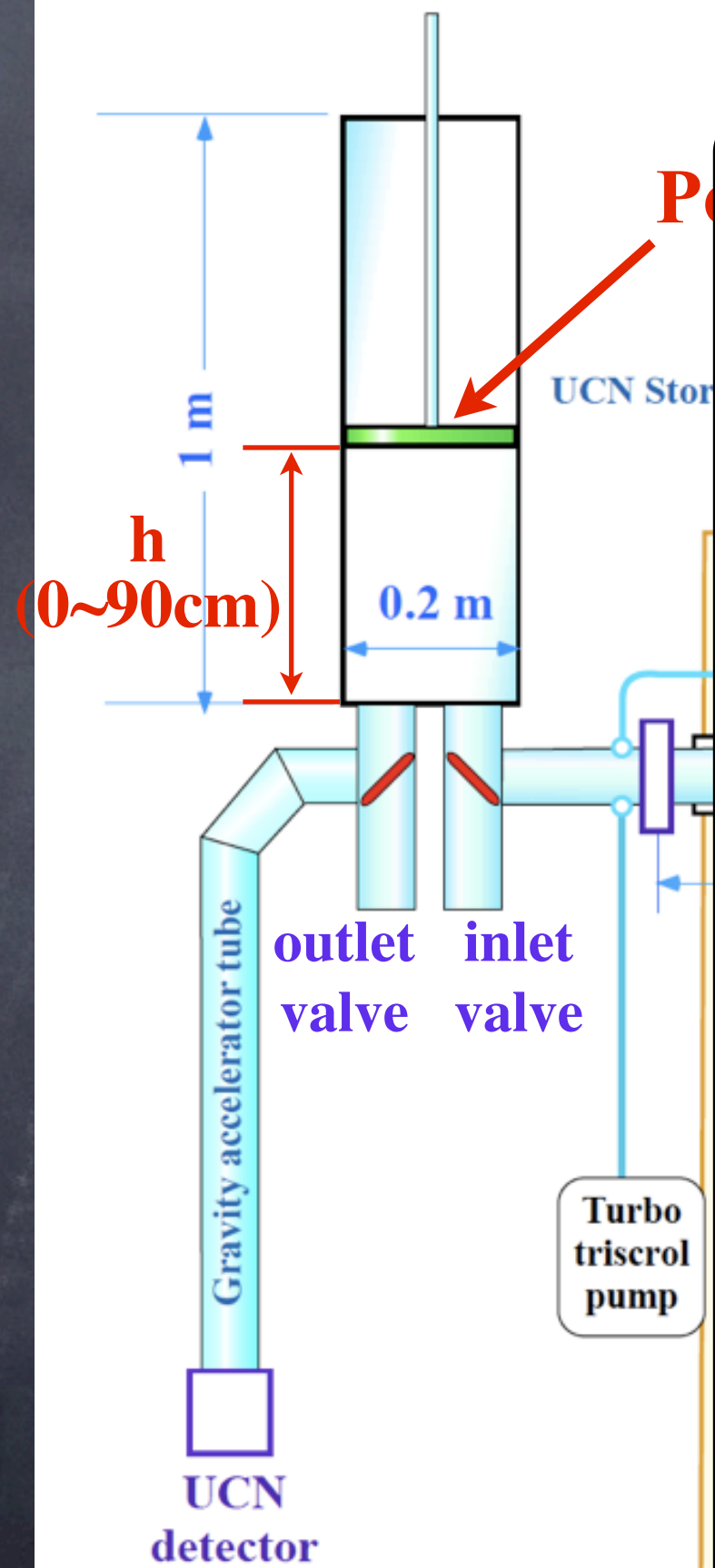


# Delay mode

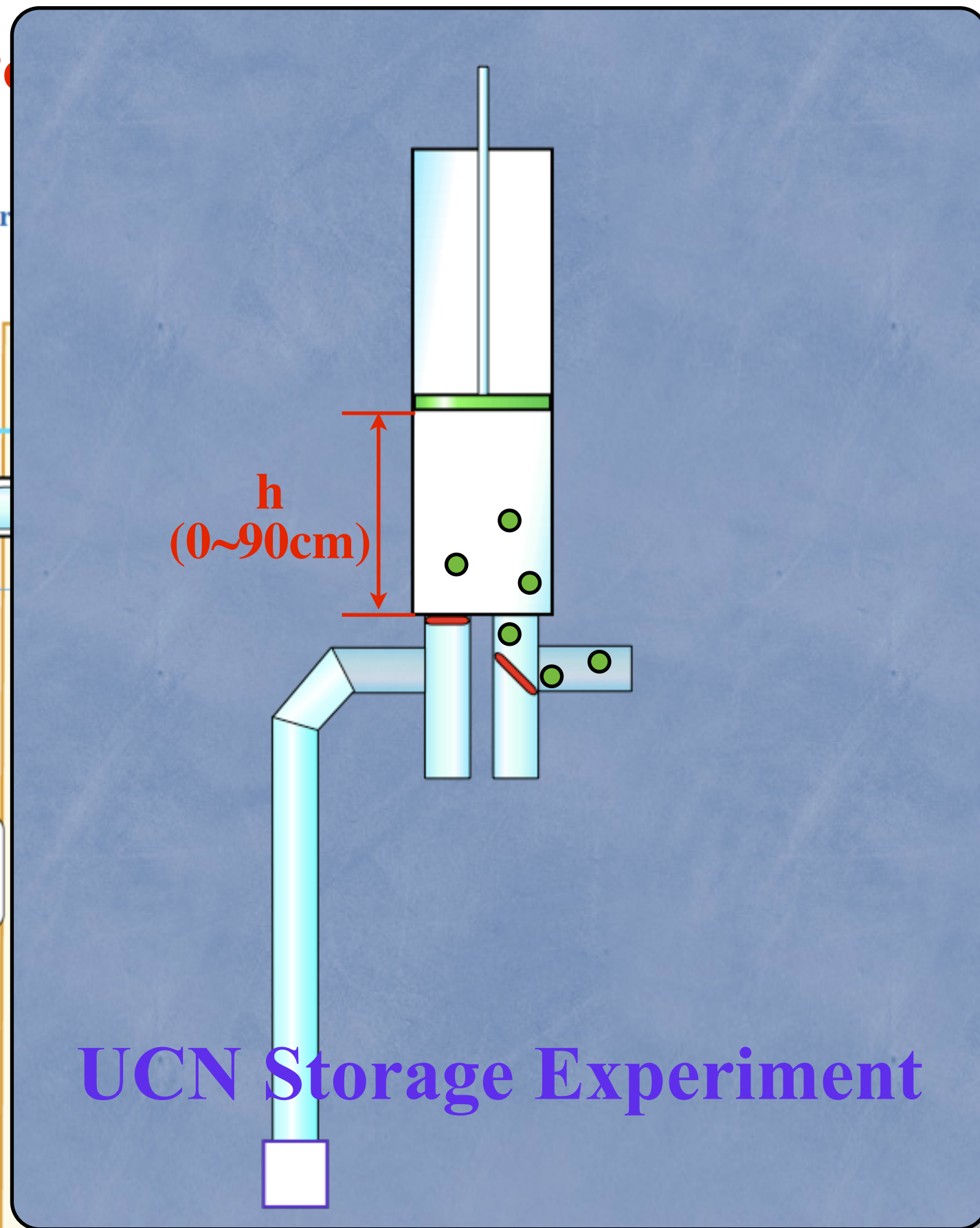
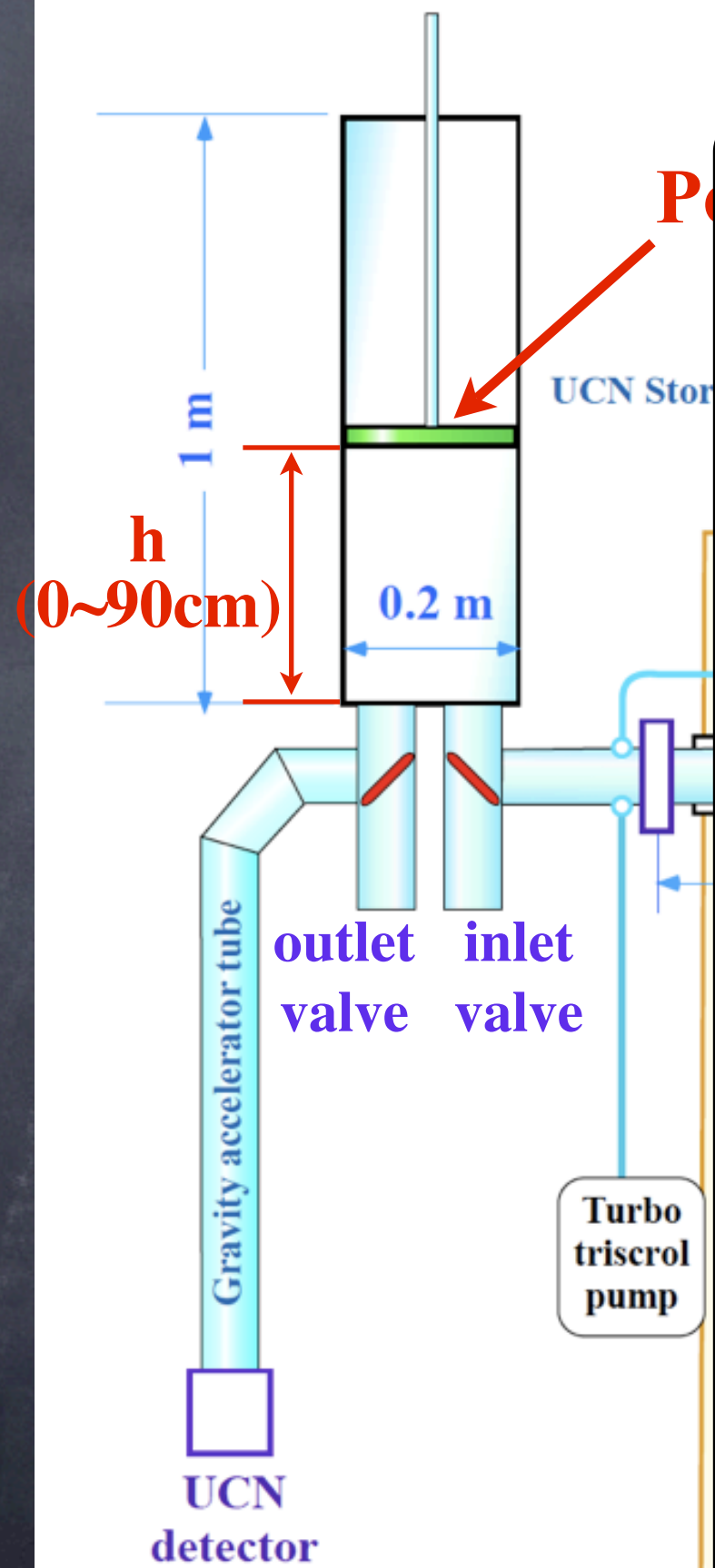






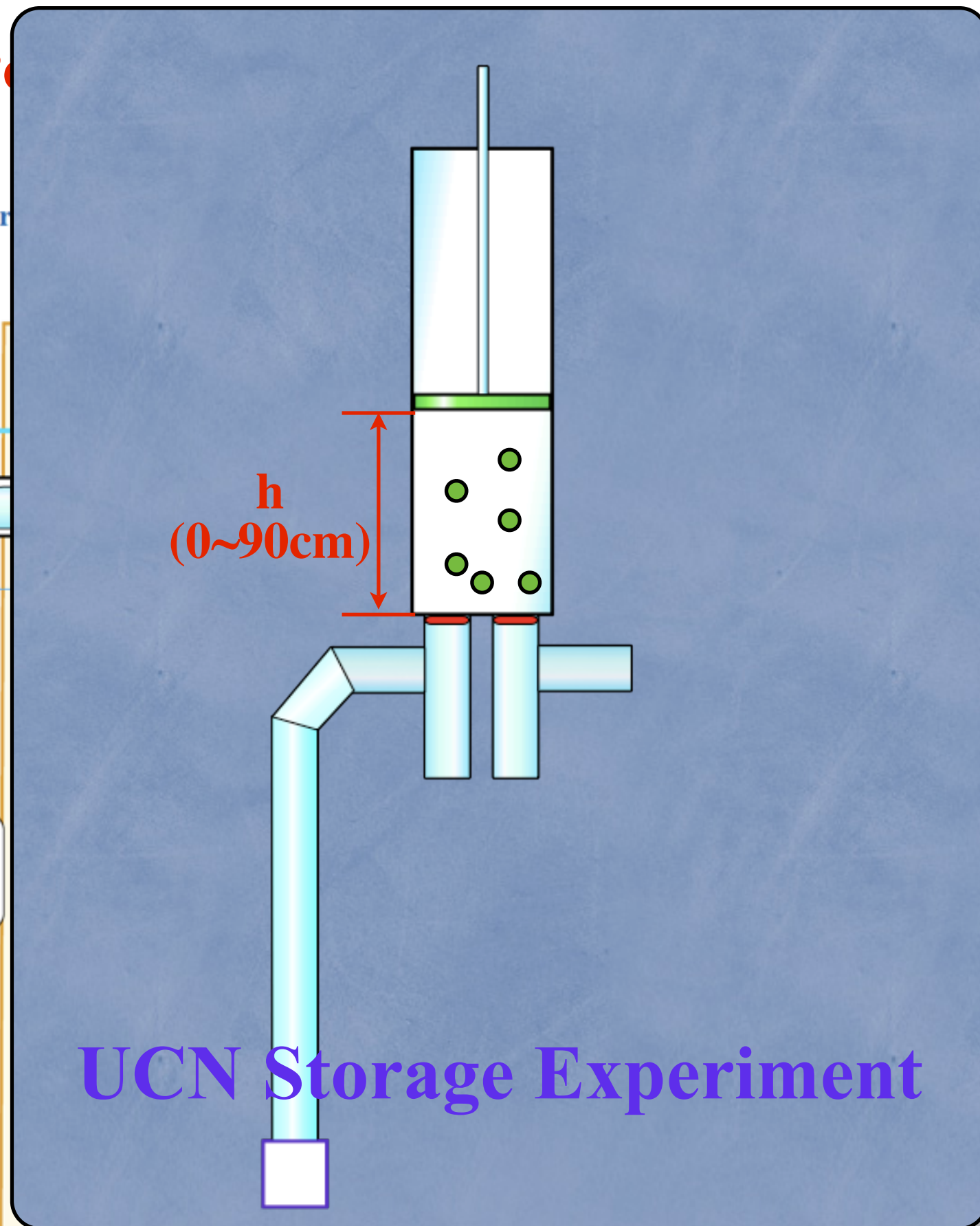
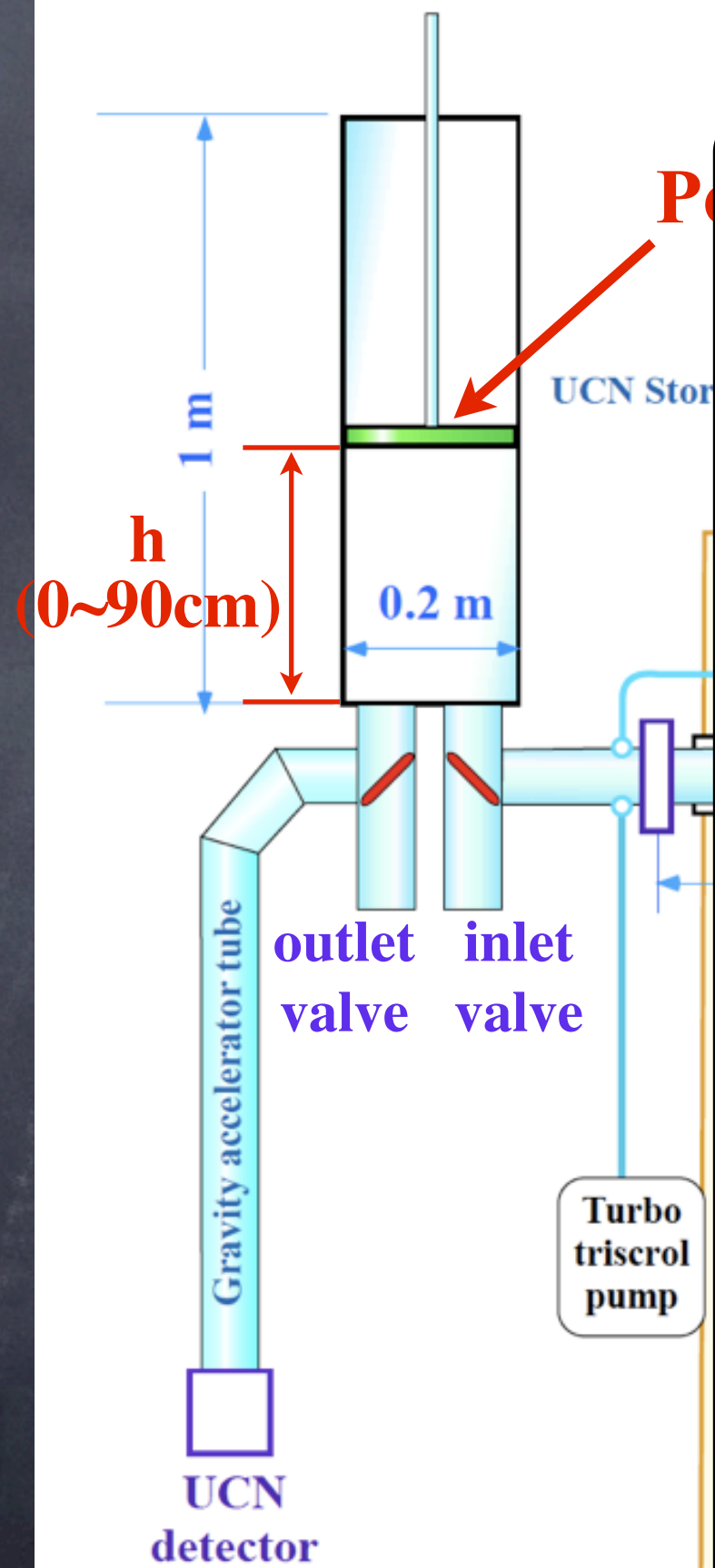






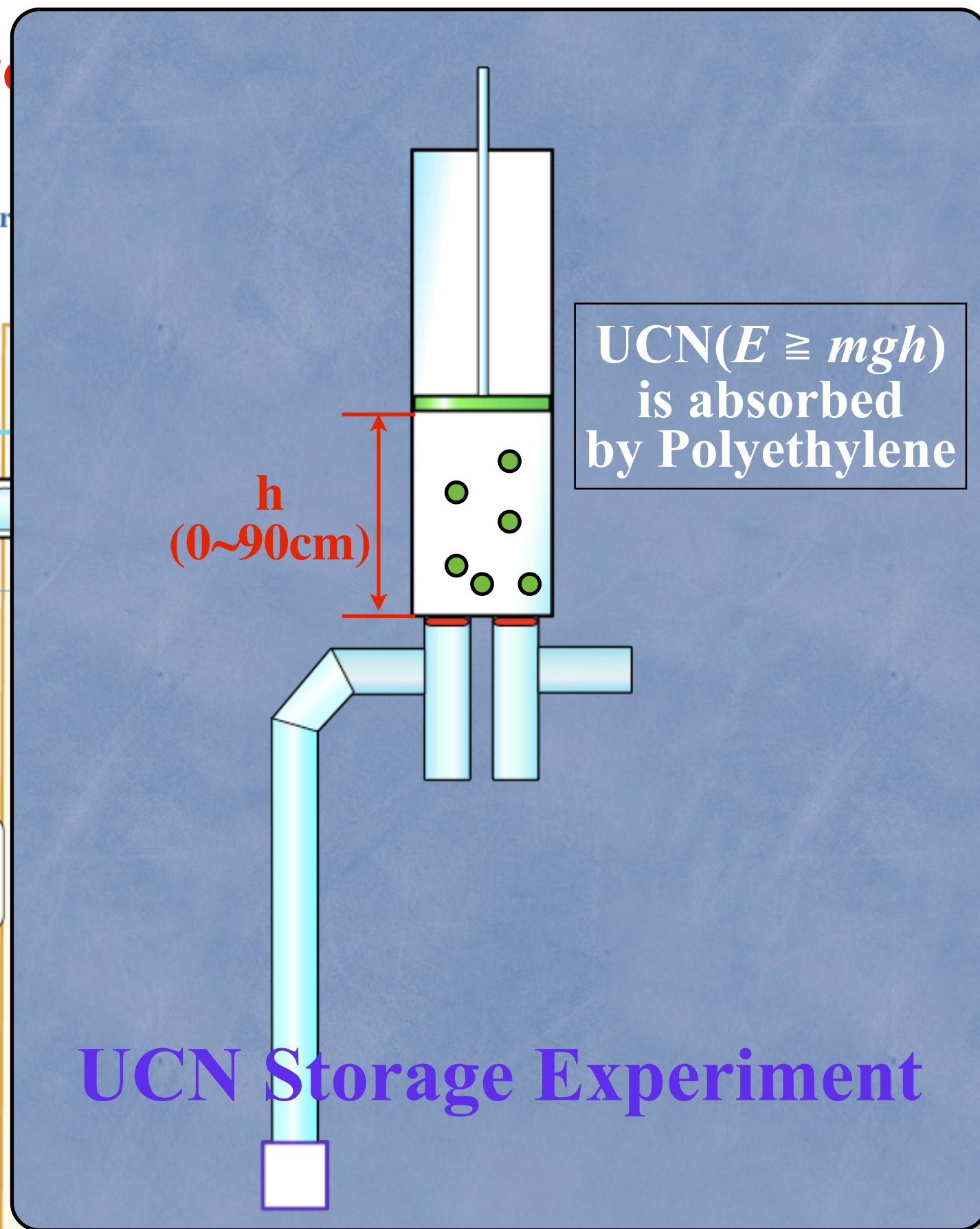
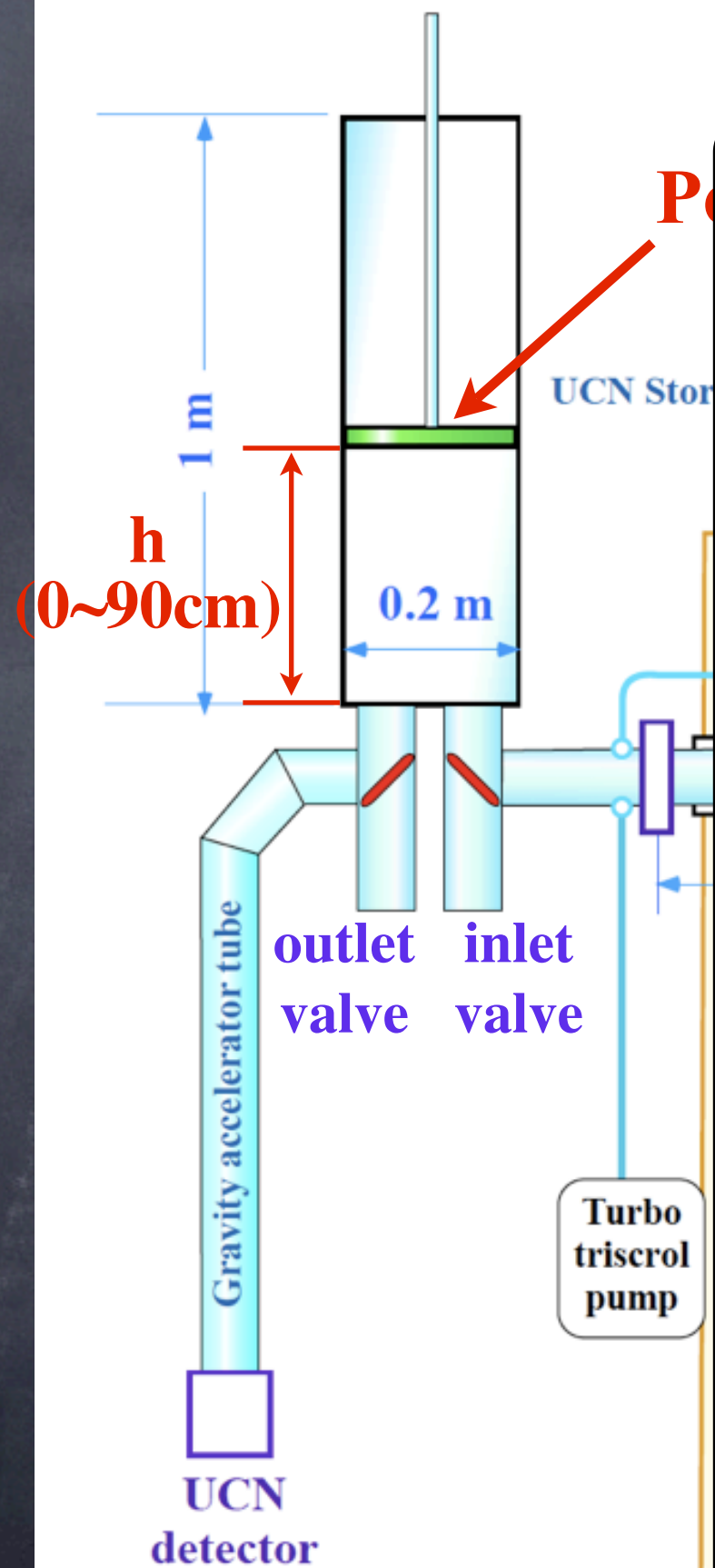
UCN Storage Experiment

Graphite

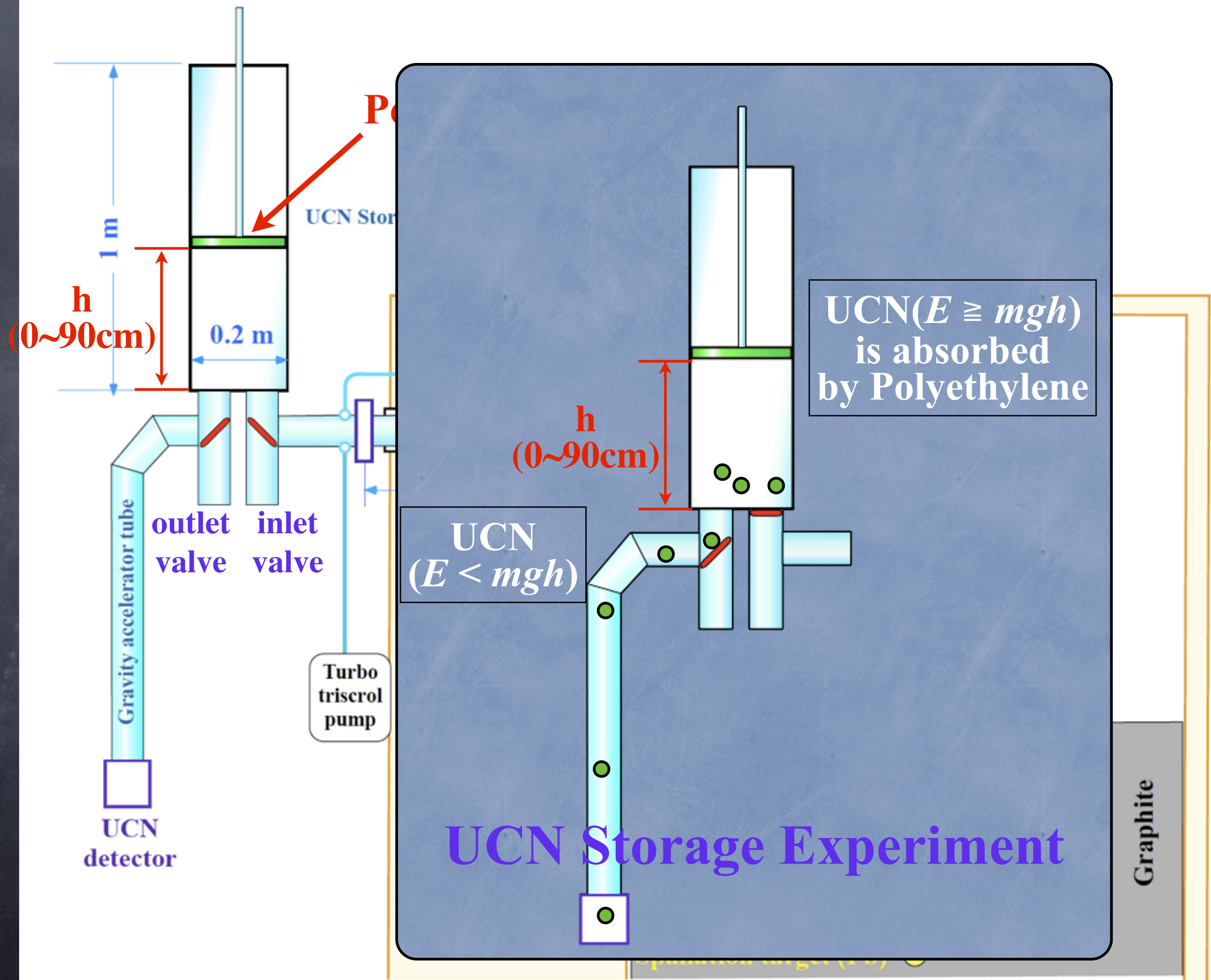


Graphite

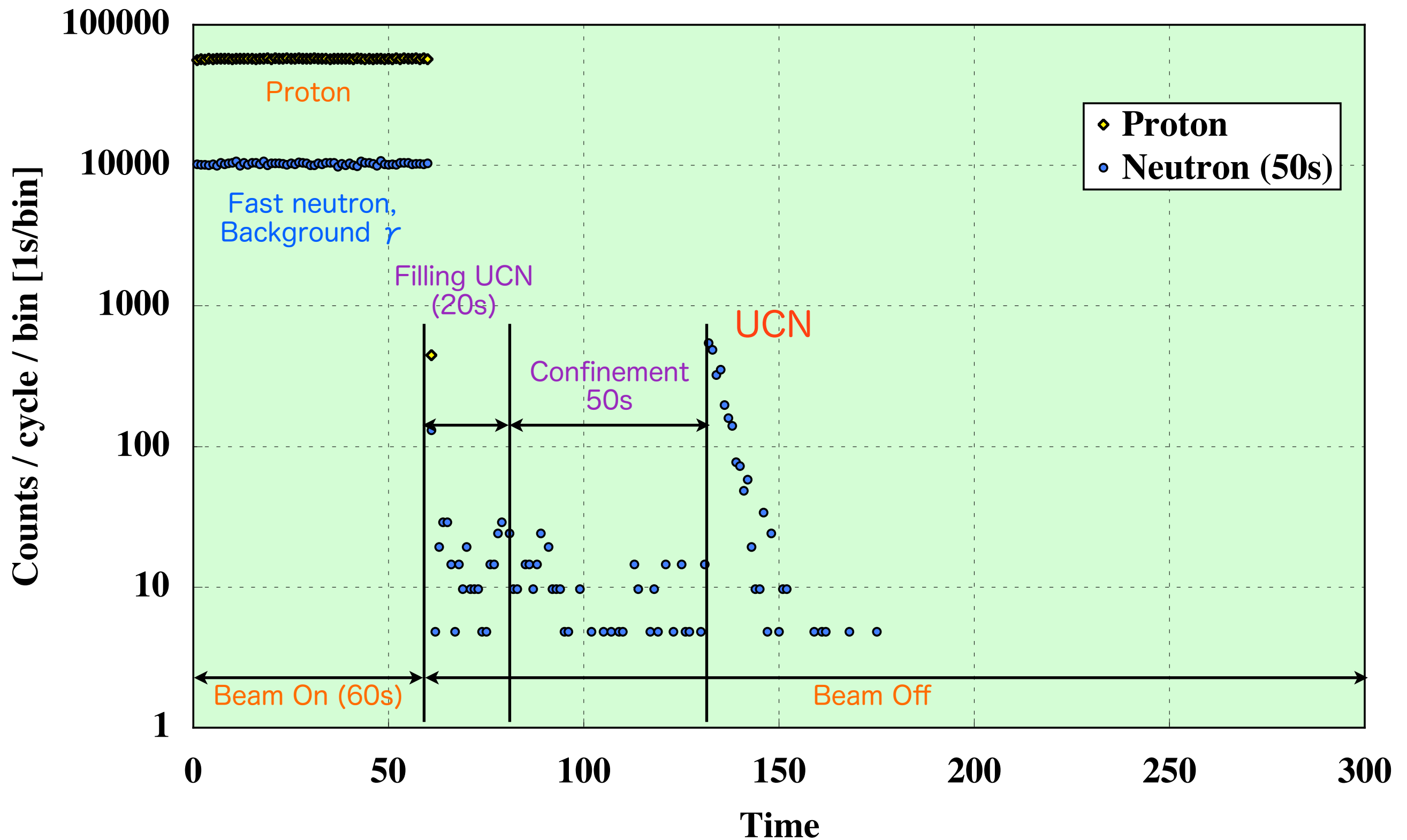




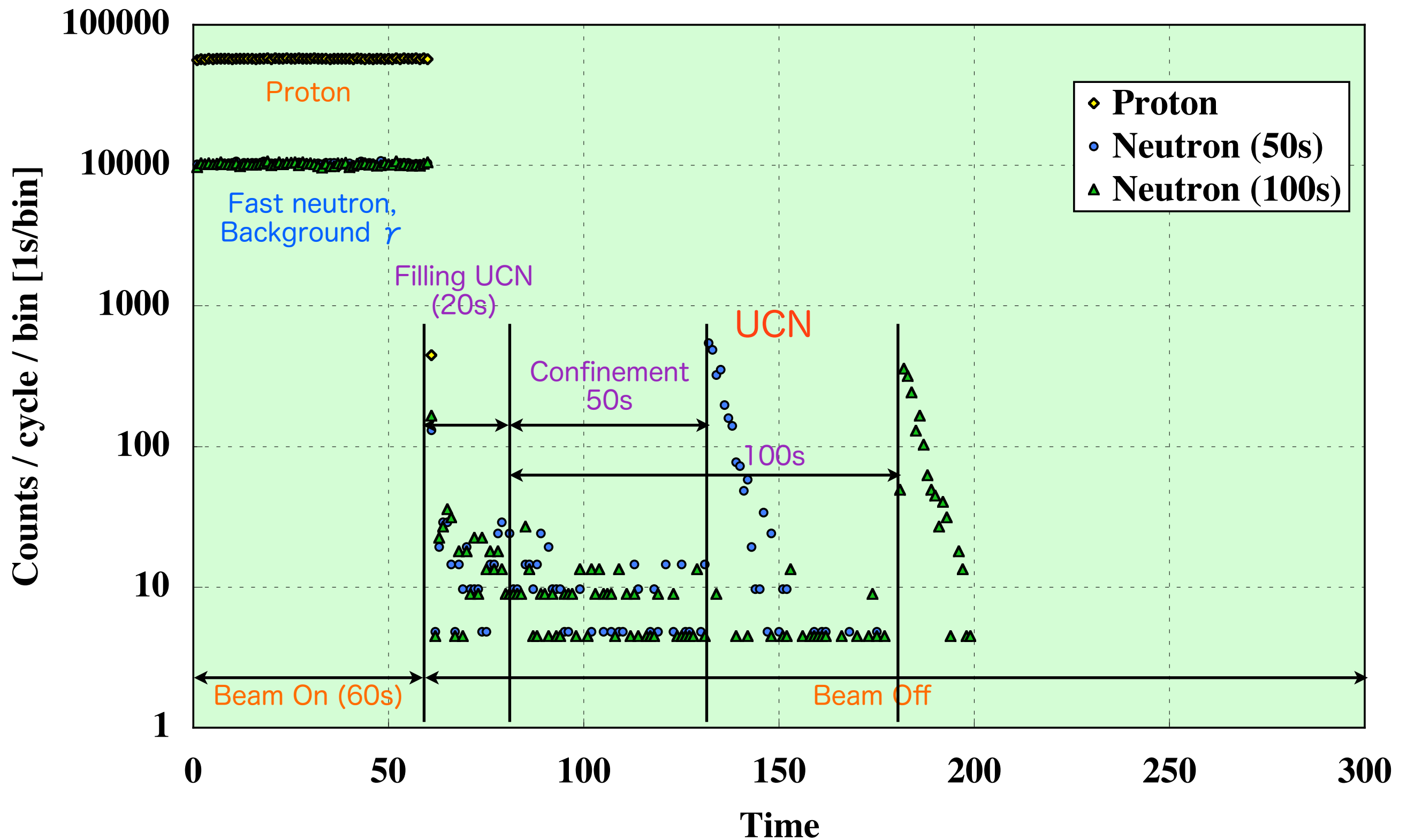




# Typical Run data (h=40cm, 1uA p-beam)

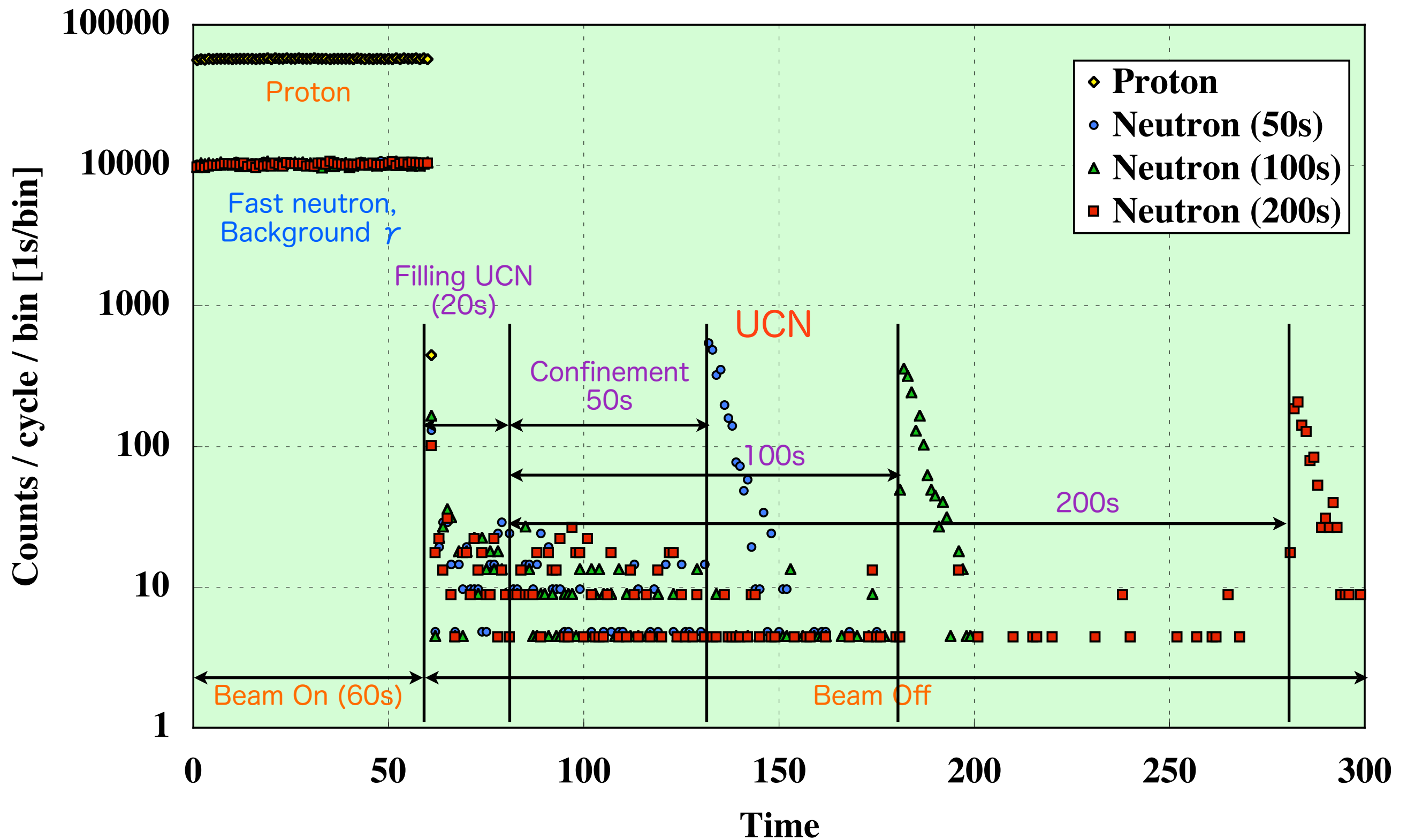


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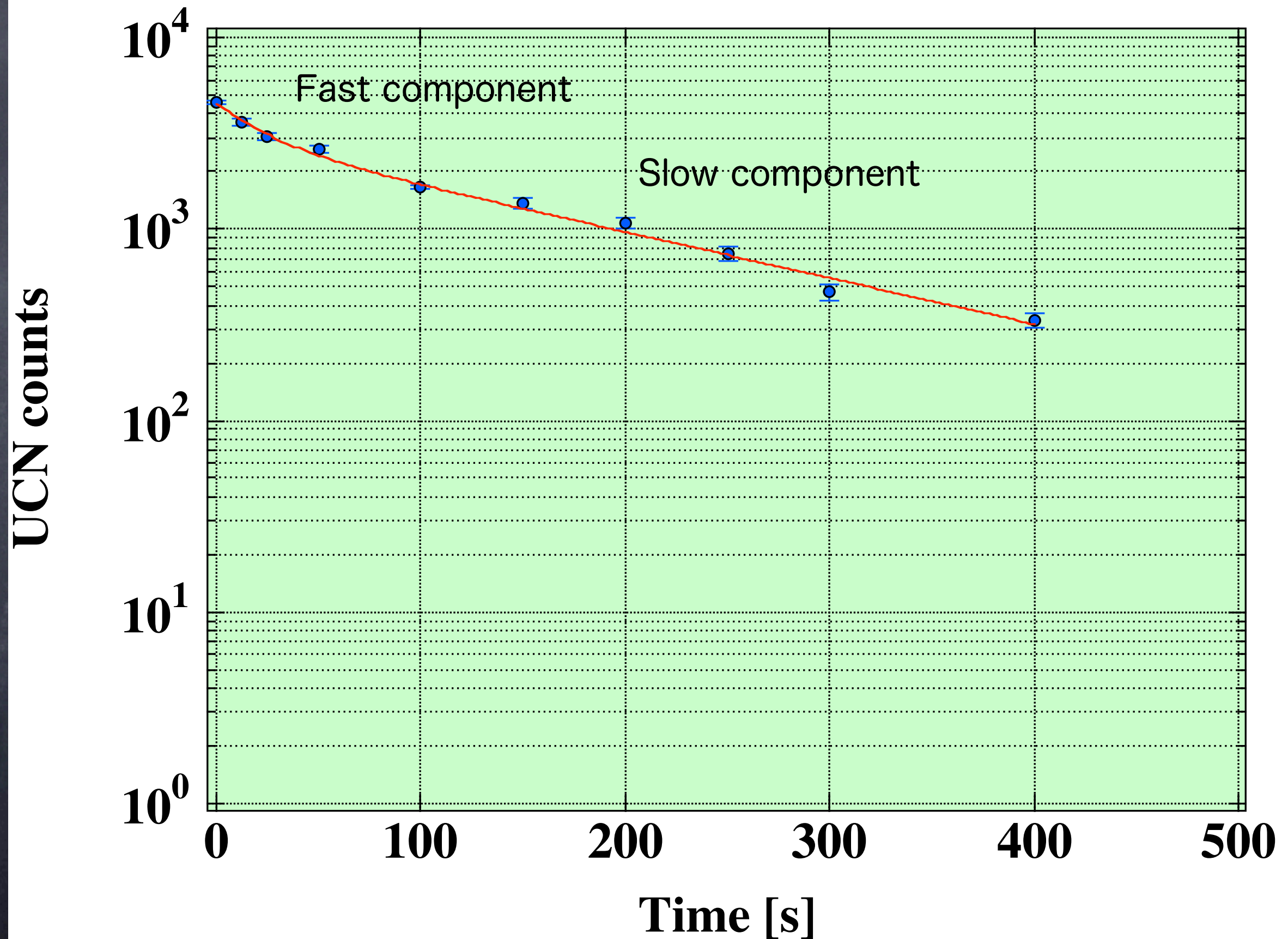




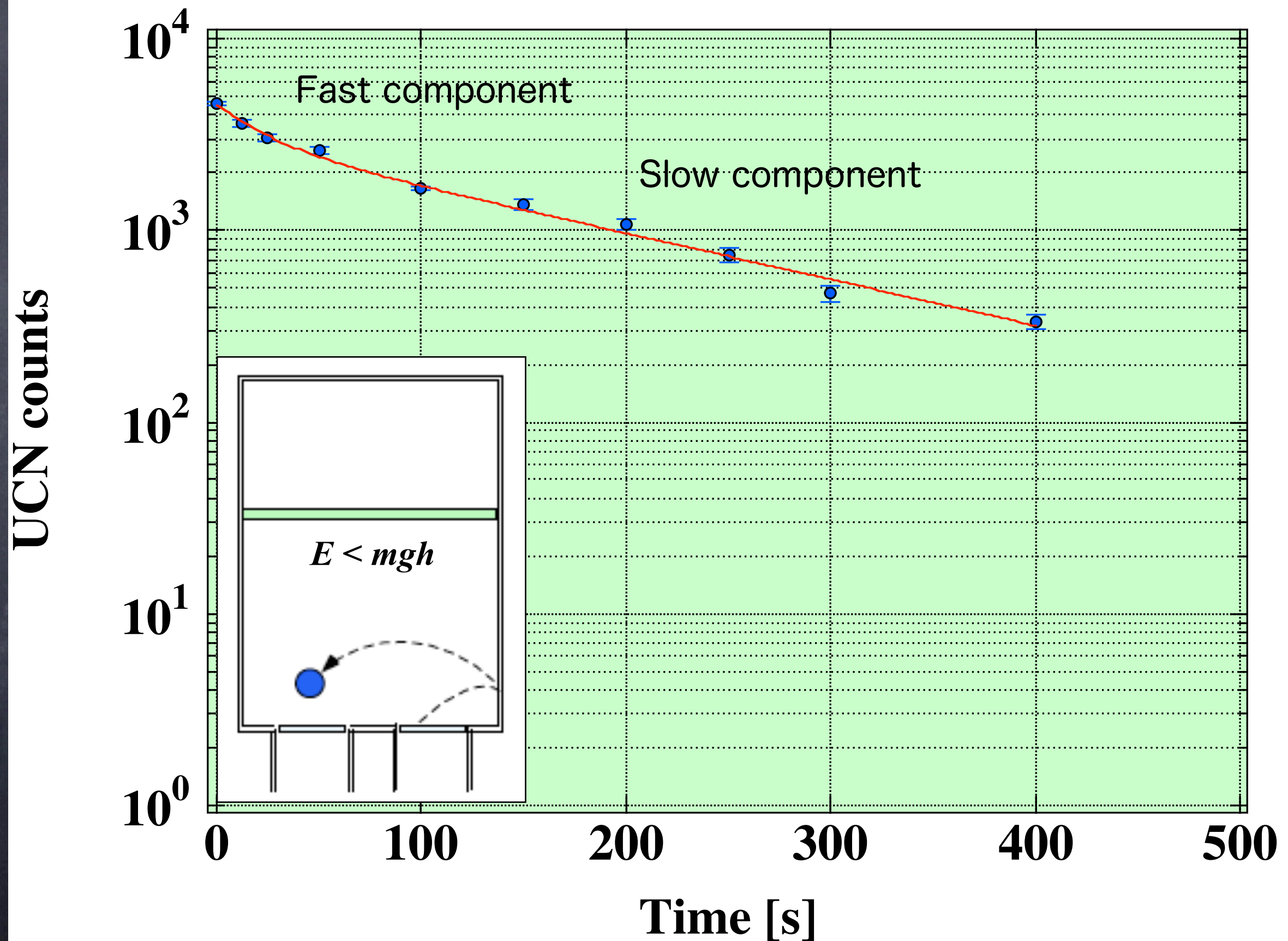
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# UCN decay curve in Storage bottle (h=40cm)

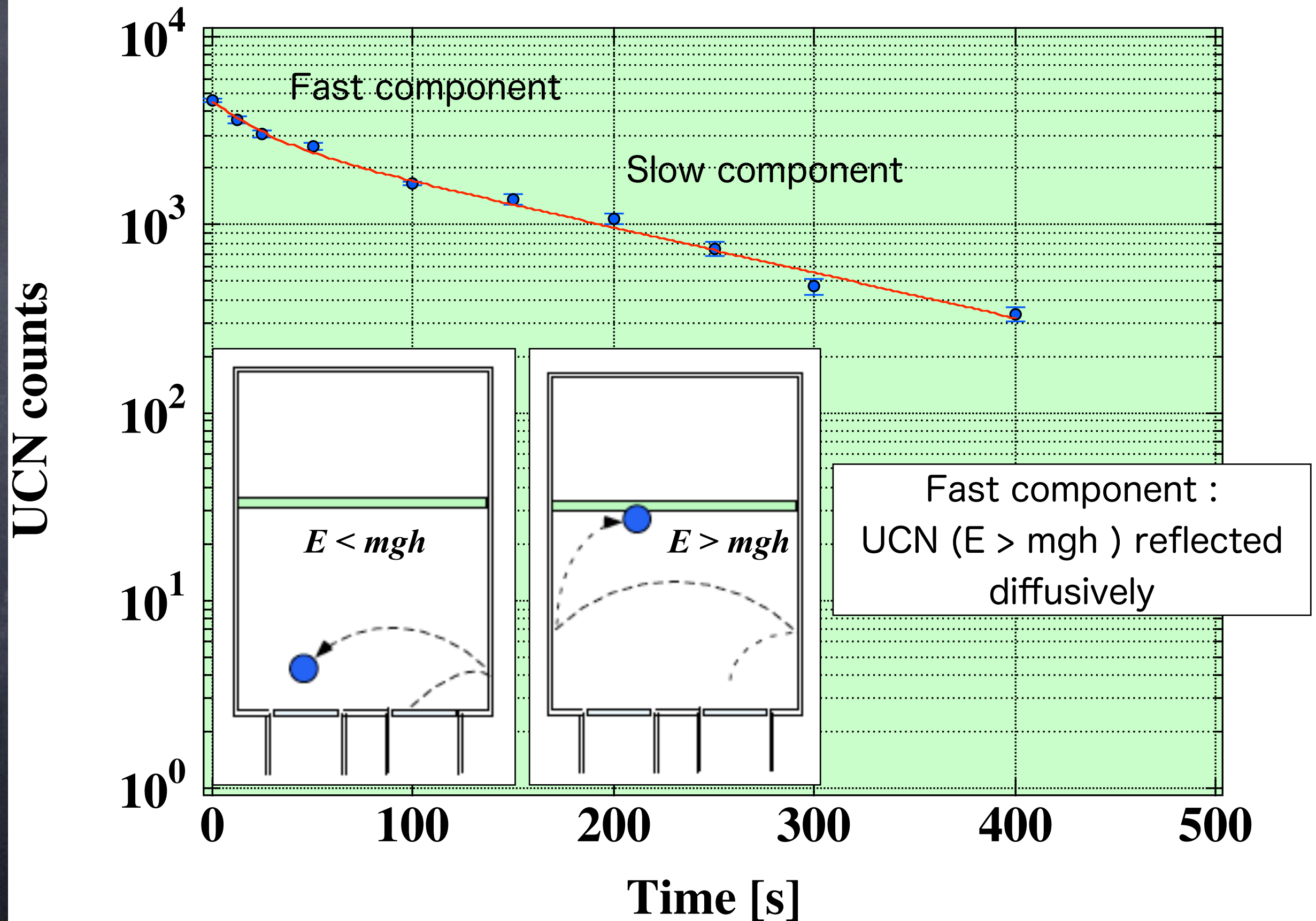


# UCN decay curve in Storage bottle (h=40cm)

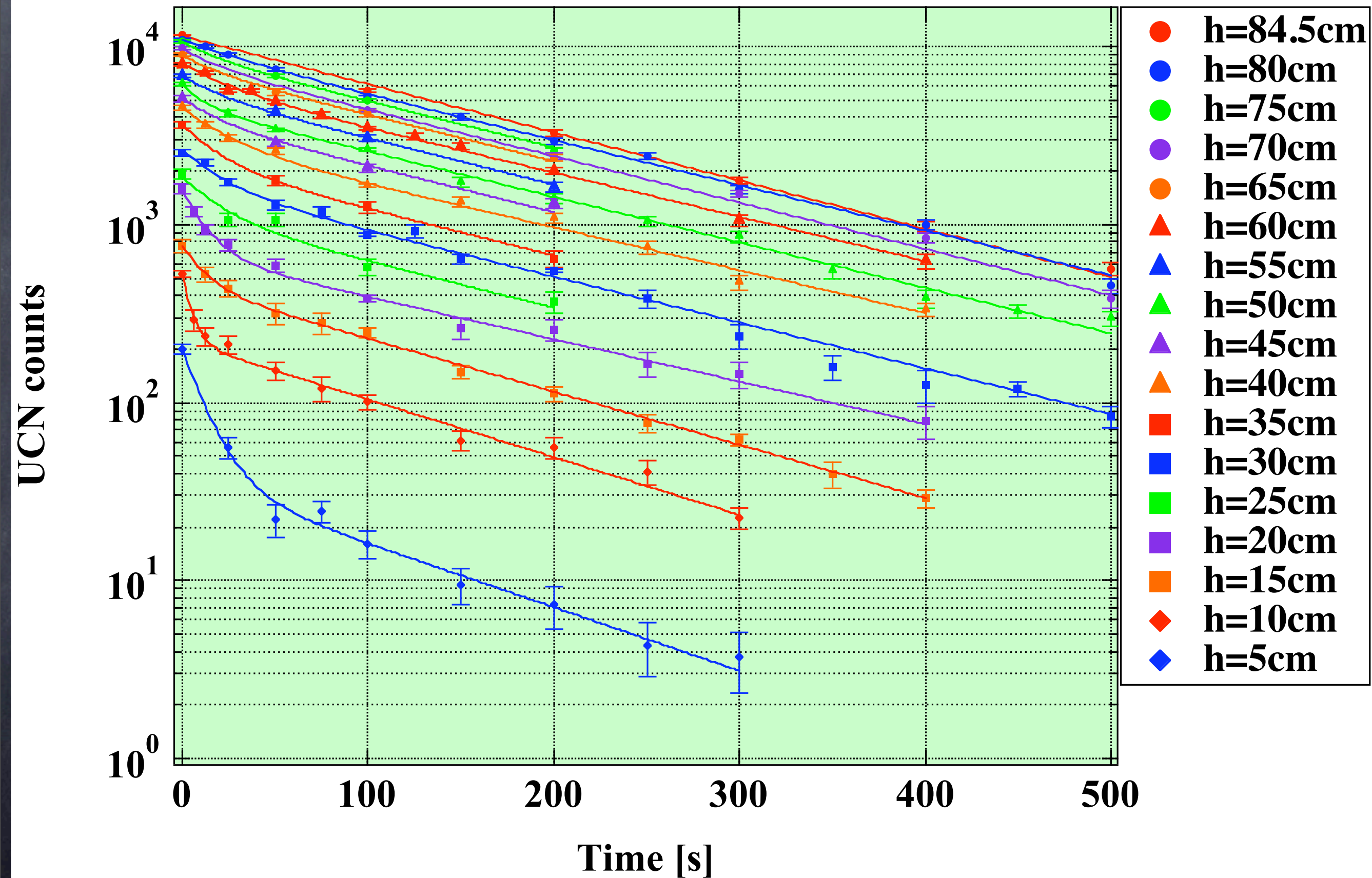




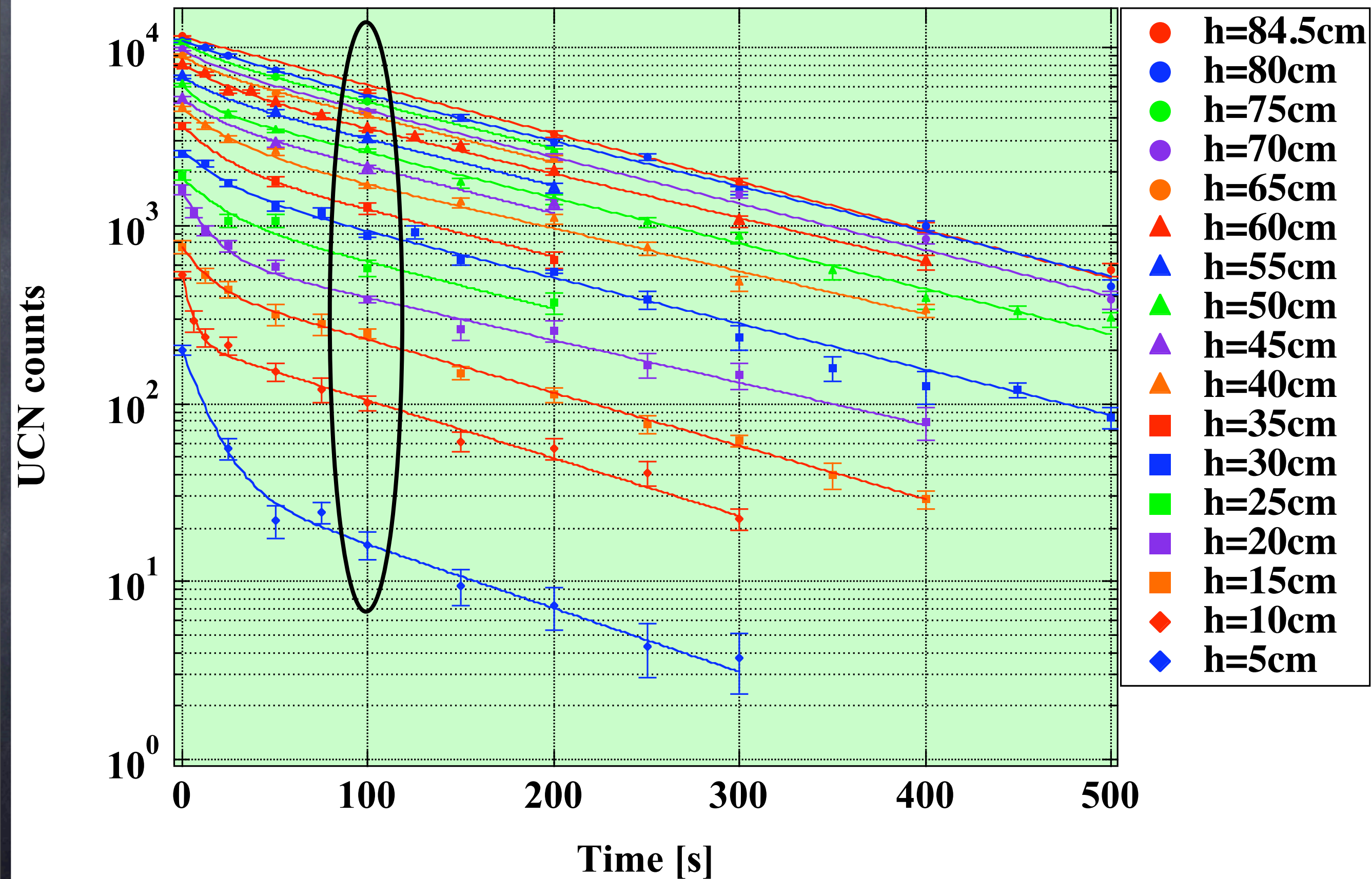
# UCN decay curve in Storage bottle (h=40cm)



UCN decay curves in Storage bottle (h=5, 10, 15...80, 84.5 cm)

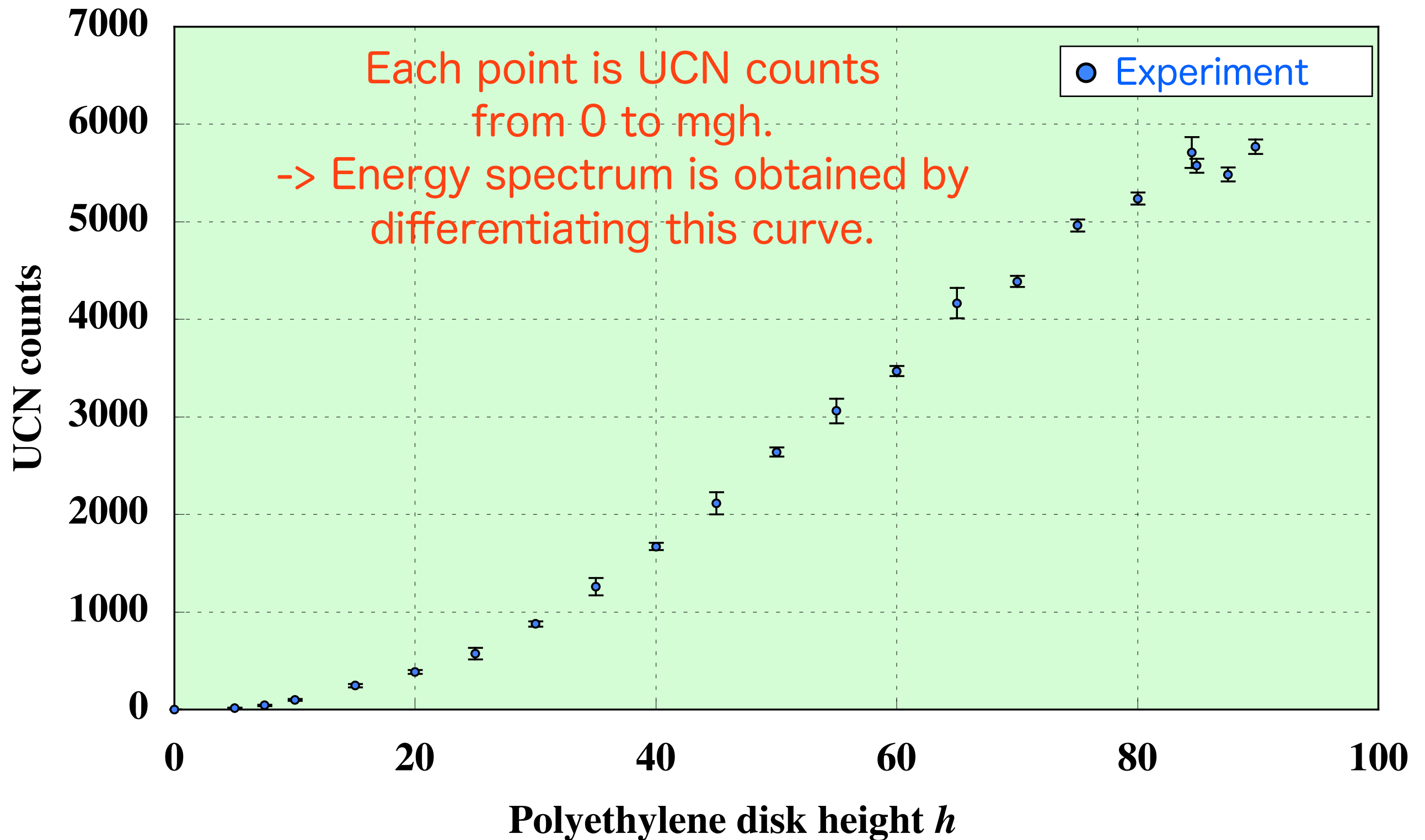


# UCN decay curves in Storage bottle (h=5, 10, 15...80, 84.5 cm)

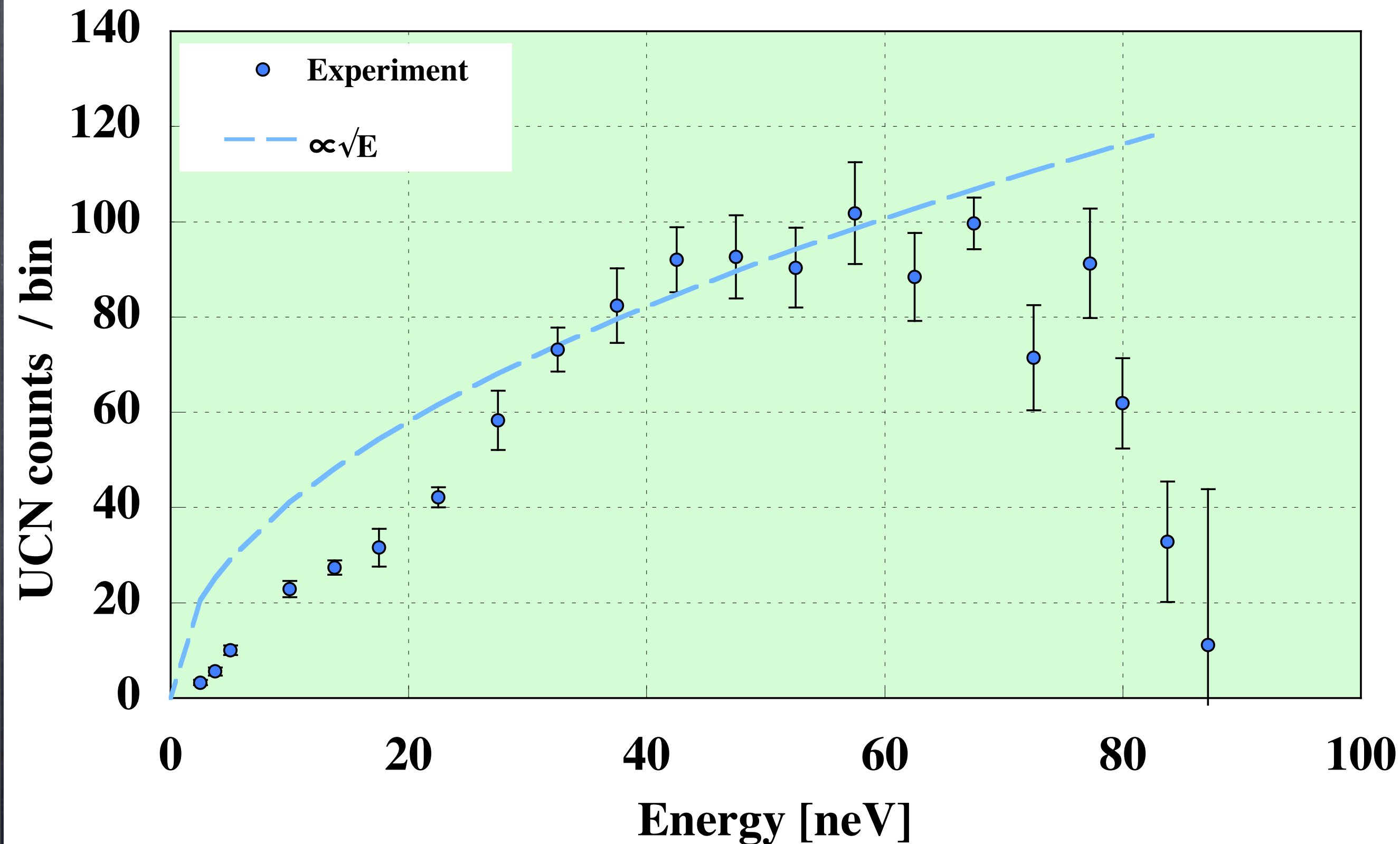




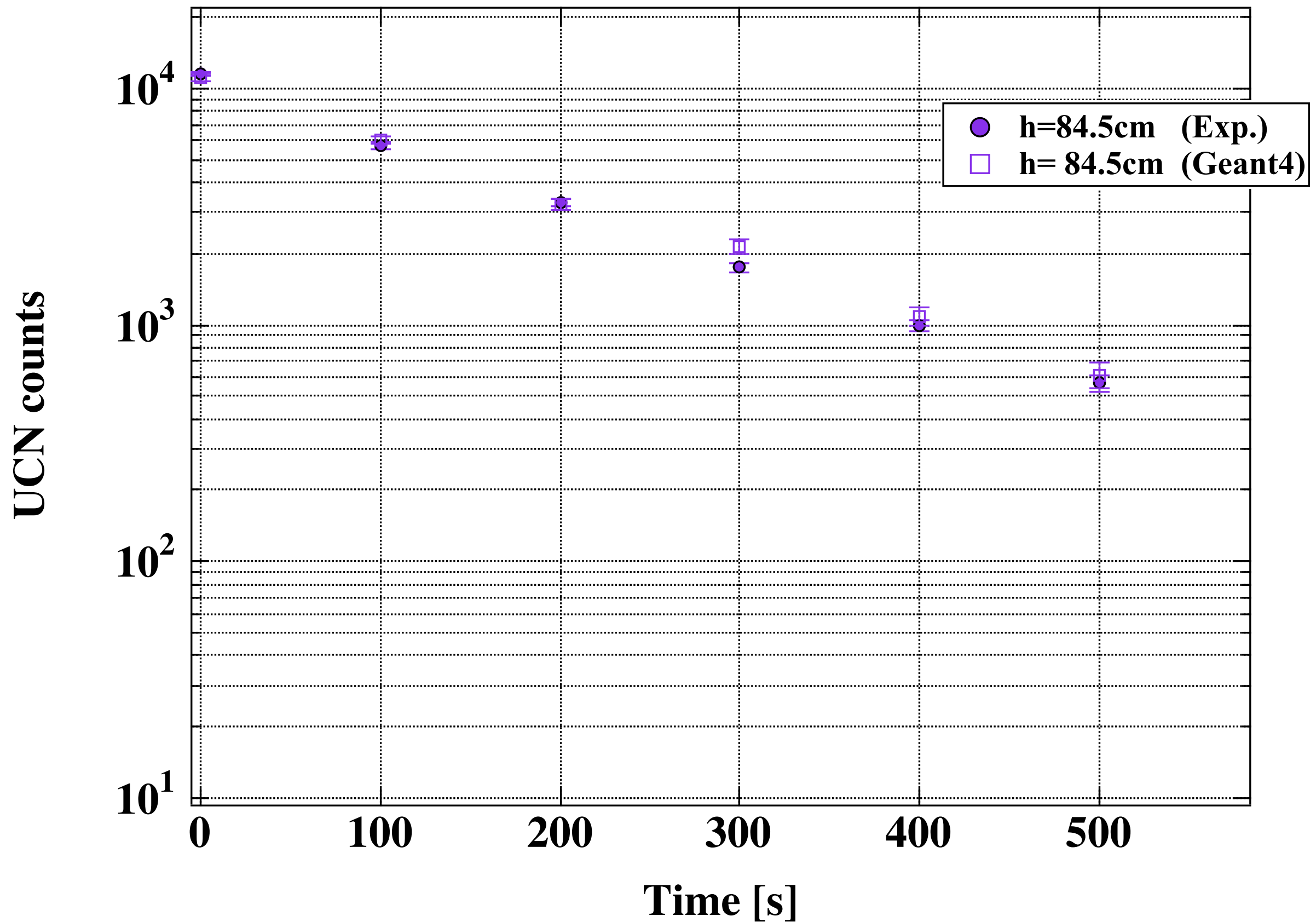
# UCN counts after 100s confinement



# UCN Energy spectrum

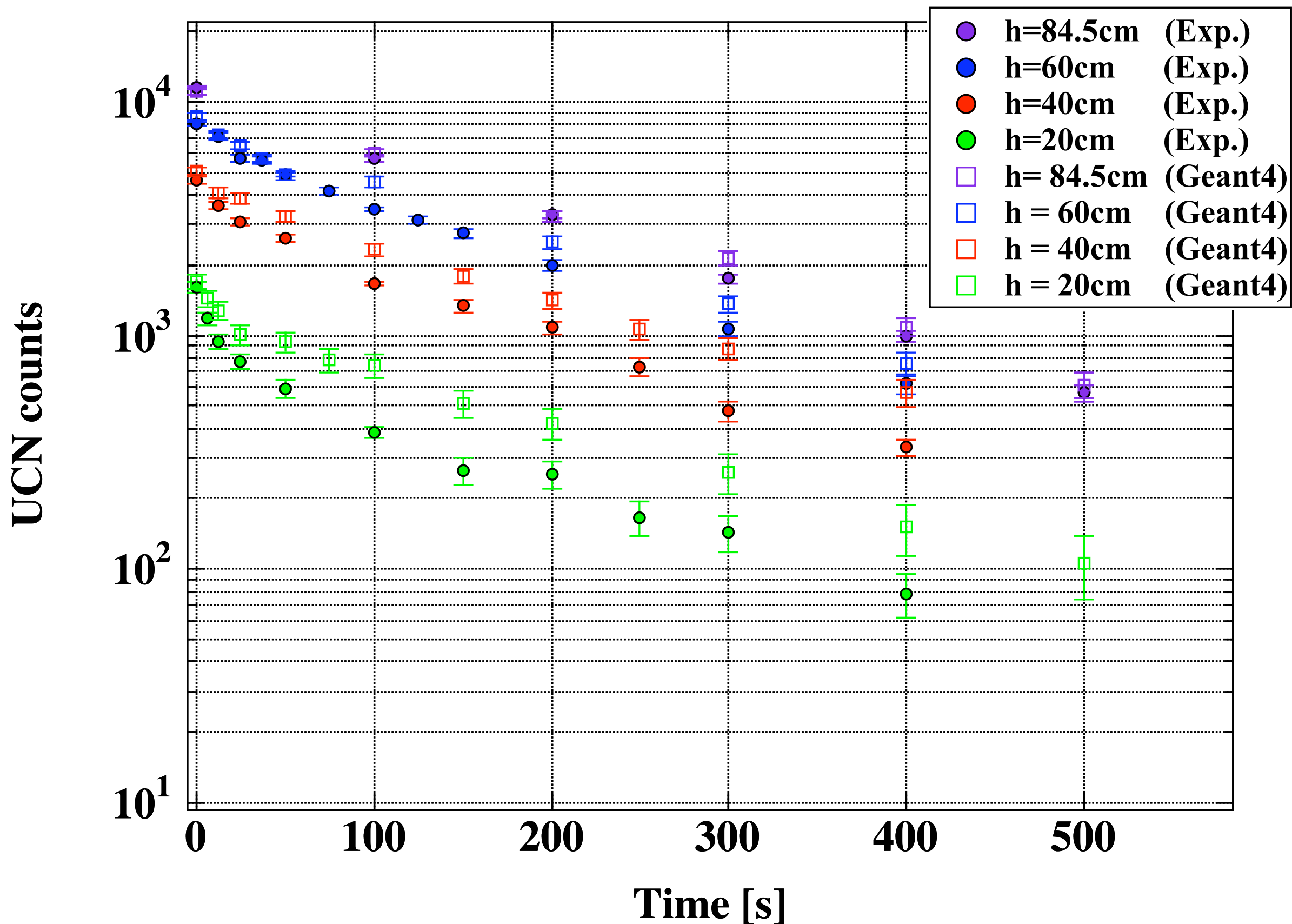


# UCN decay curves in Storage bottle (Comparison with Geant4)

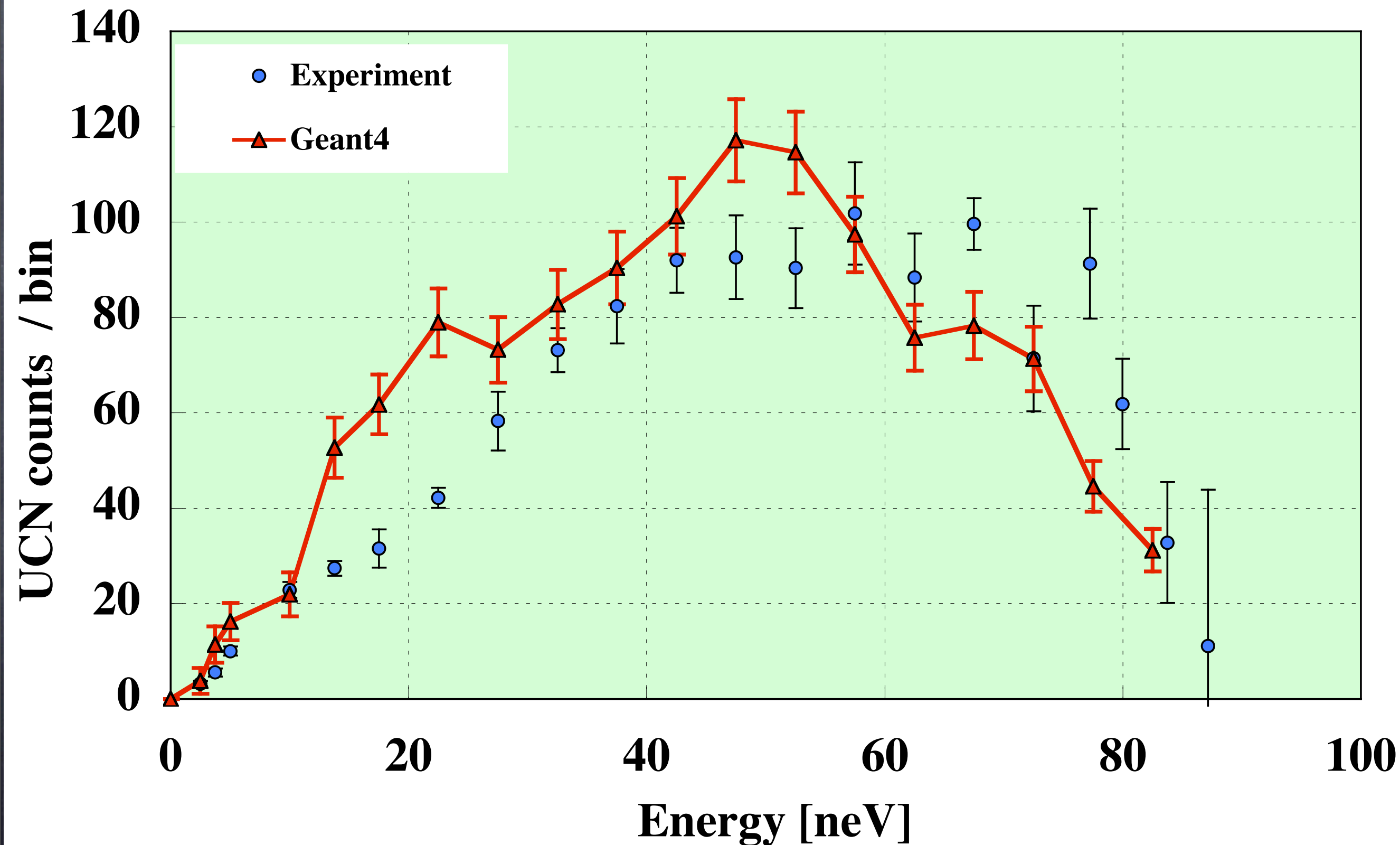




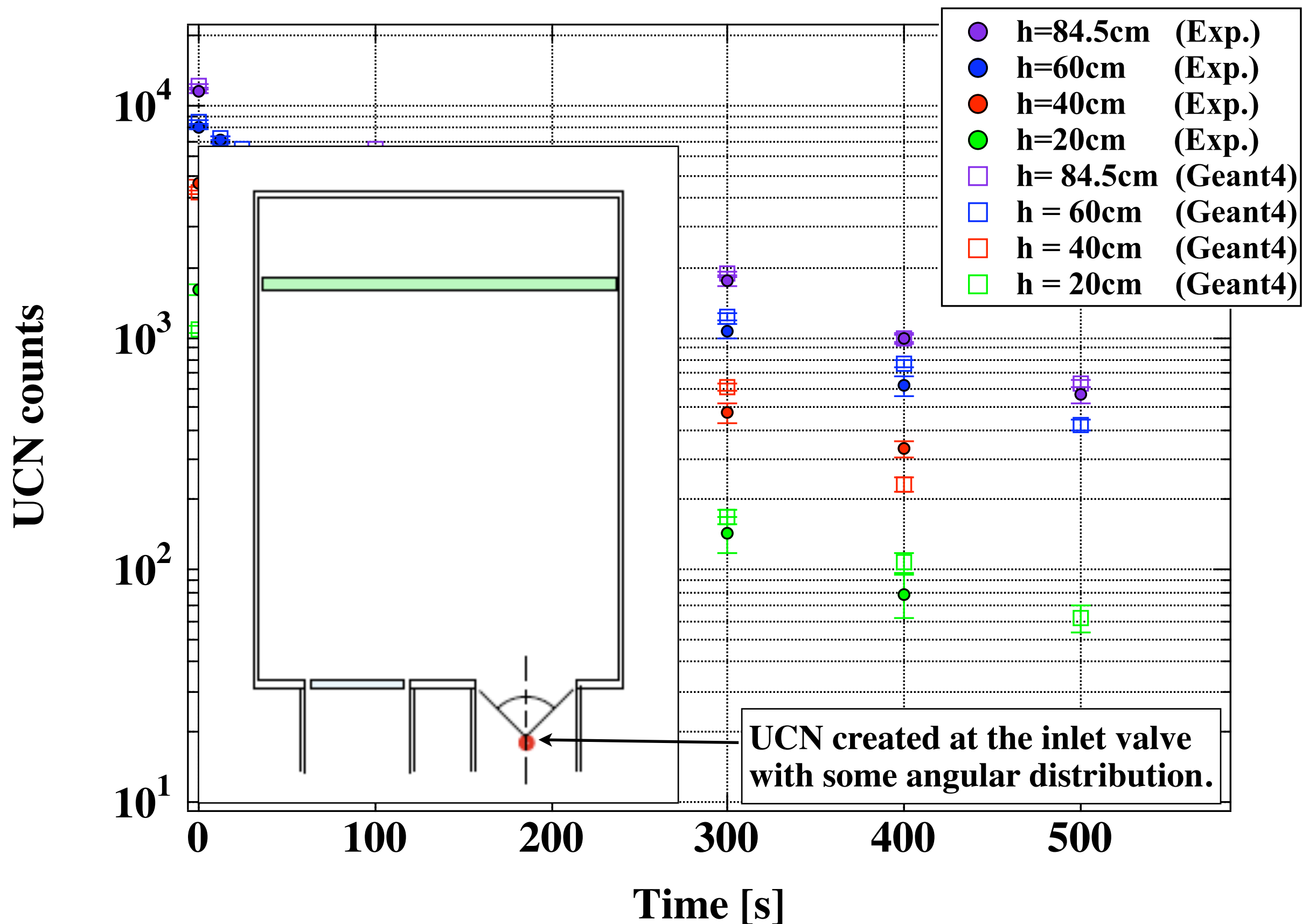
# UCN decay curves in Storage bottle (Comparison with Geant4)



# UCN Energy spectrum

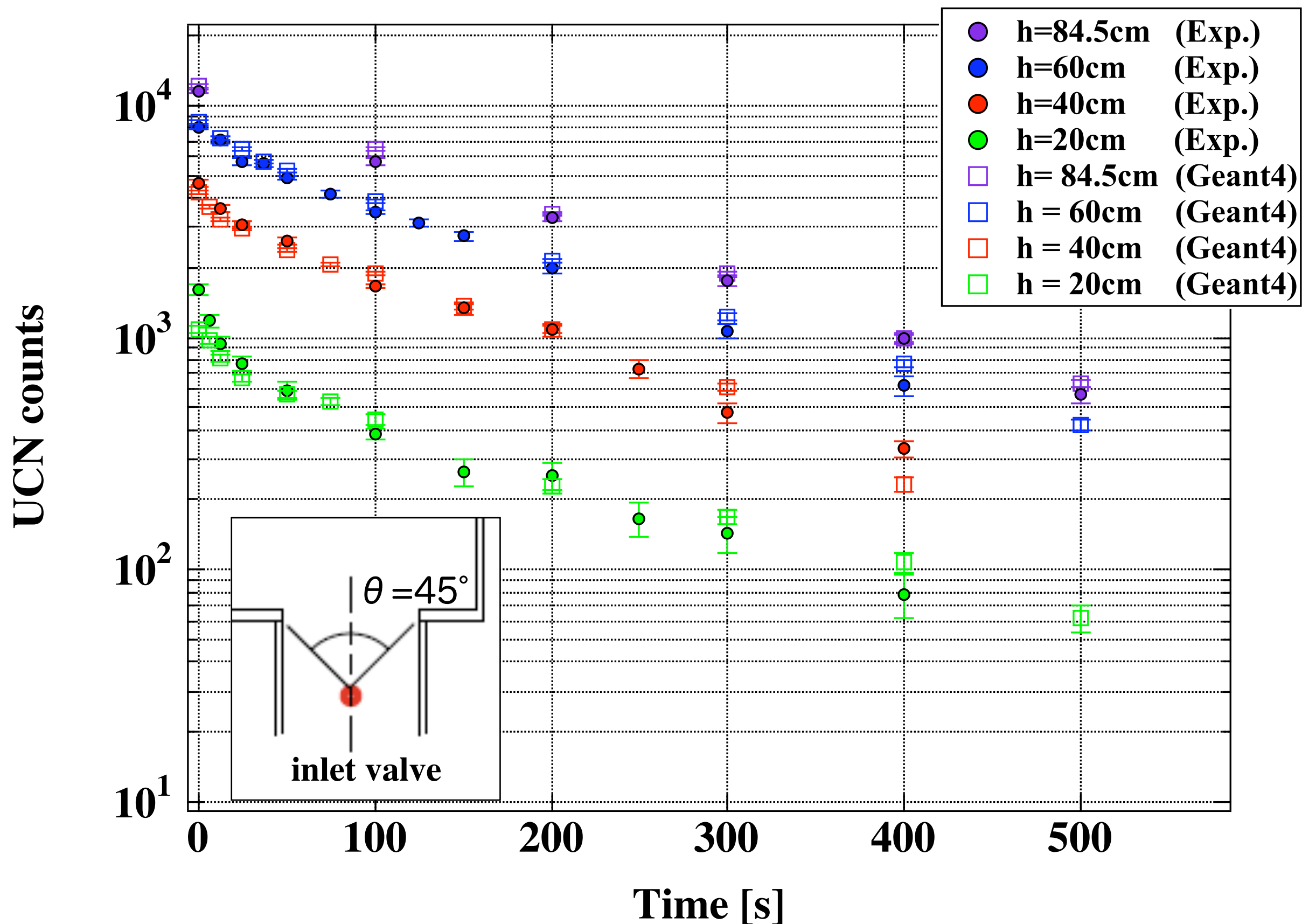


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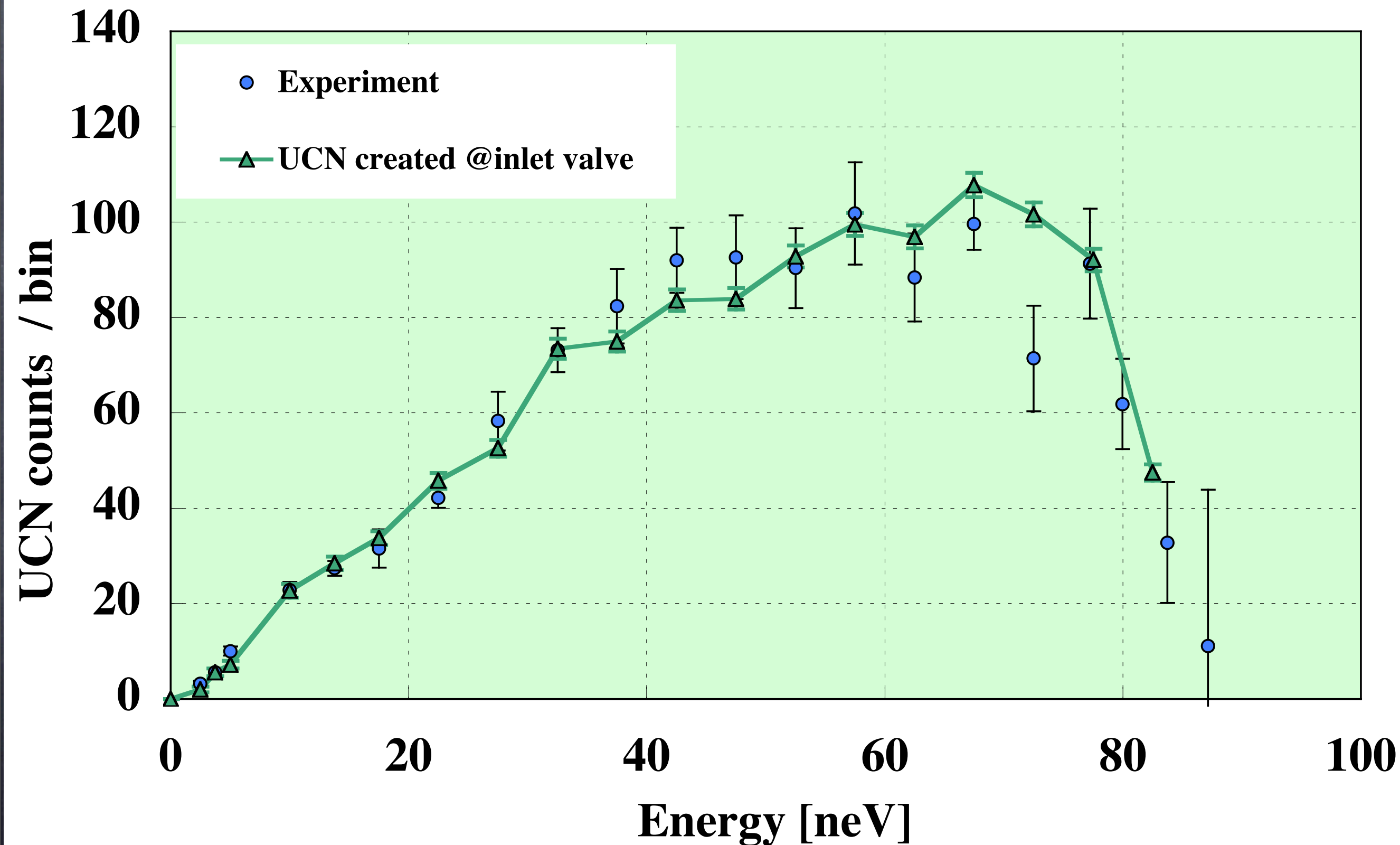




# UCN decay curves in Storage bottle (Comparison with Geant4)



# UCN Energy spectrum





# Summary

- UCN Energy spectrum of our UCN source was obtained by UCN storage experiment.
- Geant4 simulation roughly reproduces the obtained energy spectrum, but it deviates in the lower energy region.
- The cause of the deviation seems to be the UCN angular distribution at the entrance of the storage bottle.



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Thanks.