

# **Nuclear Physics Group Meeting 7/8**

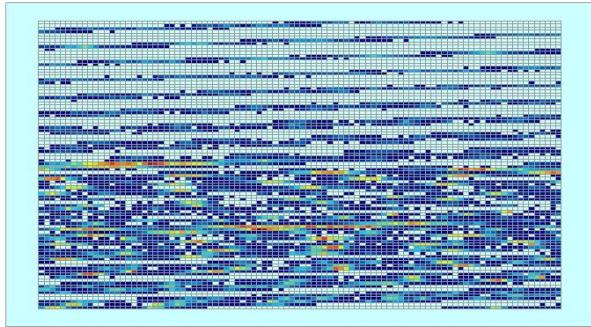
## ***Week 6 Recap***

*Jenna Lawson - Dr. Greg Kalicy - Imran Hossain*

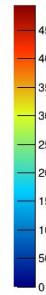
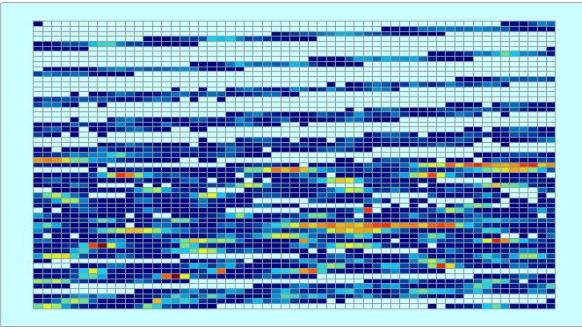
- Visited ODU and got a brief tour of a few of the labs on campus (6/28)
- Fought a lot with the computer to get ifarm configured properly on my laptop (7/1 - 7/2)
- Manually plotted -c 3 hit pattern (7/1)
- Beginnings of a path in the prism hit pattern plot (7/3)
- Submitted my first job to ifarm (7/3)

### -c 3 Hit Pattern with Varying Pixel Sizes (Polar Angle = 30°)

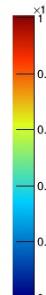
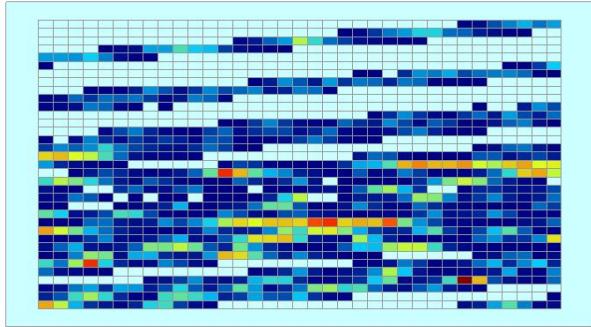
pixel size = 3 mm



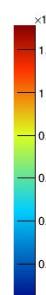
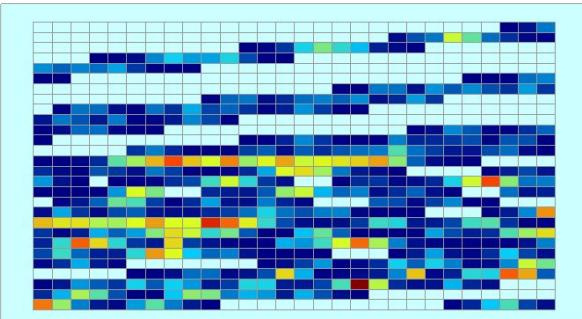
pixel size = 5 mm



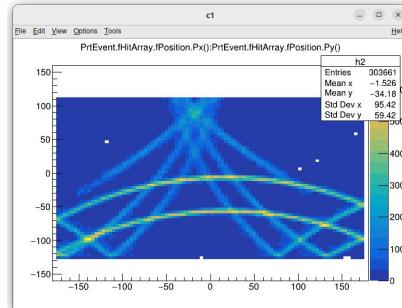
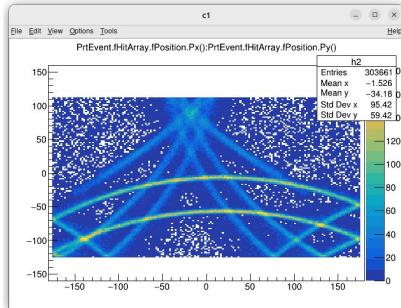
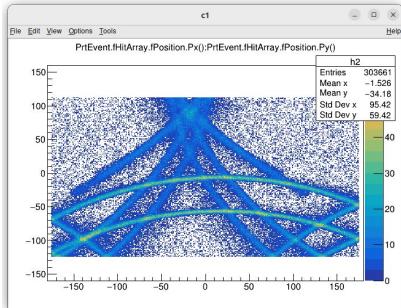
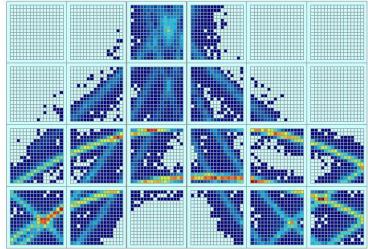
pixel size = 8 mm



pixel size = 10 mm

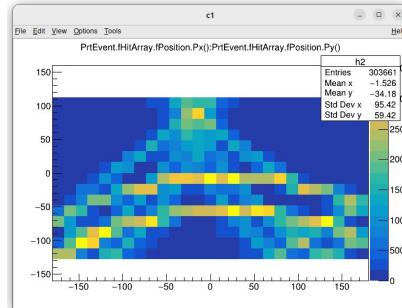
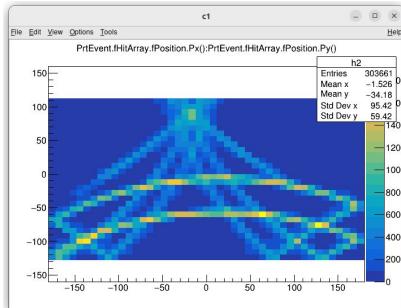


# What It Actually Looks Like



```
user@user-OptiPlex-5000: ~/eicdr/build/data
user@user-OptiPlex-5000: ~
user@user-OptiPlex-5000: ~
user@user-OptiPlex-5000: ~

(360, -180, 180, 320, -160, 160), "", "colz")
(long long) 303661
root [4] tree->Draw("PrtEvent.fHitArray.fPosition.Px():PrtEvent.fHitArray.fPosition.Py()>>h2(180, -180, 180, 160, -160, 160)", "", "colz")
(long long) 303661
root [5] tree->Draw("PrtEvent.fHitArray.fPosition.Px():PrtEvent.fHitArray.fPosition.Py()>>h2(90, -180, 180, 80, -160, 160)", "", "colz")
(long long) 303661
root [6] tree->Draw("PrtEvent.fHitArray.fPosition.Px():PrtEvent.fHitArray.fPosition.Py()>>h2(45, -180, 180, 40, -160, 160)", "", "colz")
(long long) 303661
root [7] |
```



# Submitting a Job to ifarm

```
[jlawson@ifarm2401 ~/job_submission_sim]$ python3 sim_new_job_submit.py
Creating SLURM submission files

Input directory: /u/home/jlawson/eicdirc/build
Input theta list: Theta_values.list
Output directory: /u/home/jlawson/job_submission_out/hits_root_files
Log directory: /u/home/jlawson/job_submission_out/log

SLURM submission files have been written to:
/u/home/jlawson/job_submission_out/slurmJobs

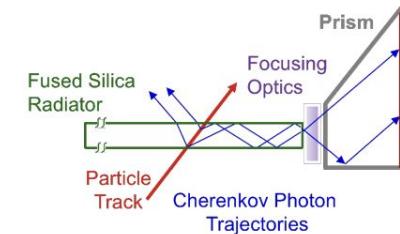
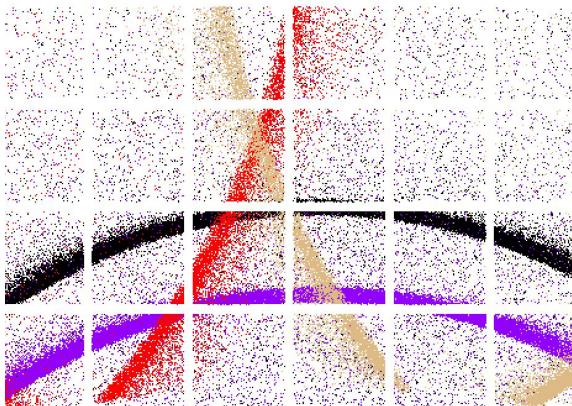
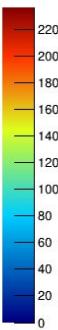
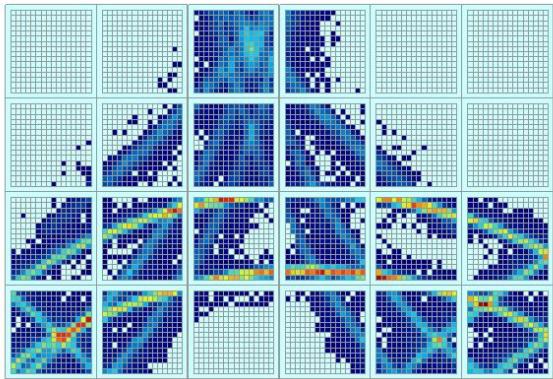
This setup will submit 1 jobs

You can submit your jobs with the script:
/u/home/jlawson/job_submission_out/slurmJobs/submitJobs.sh
[jlawson@ifarm2401 ~/job_submission_sim]$
```

Outstanding (Pending/Active) Batch Farm Jobs						
	User Name	Account	Pending	Running	Holding	Other Jobs
Farm Nodes	andrsmit	halld	1,939	491	0	0
Slurm Jobs	barryp	jam	2,073	6	0	0
Swift2 Jobs	clas12-8	halld-pro	0	578	0	0
Usages	covrig	halldc	0	1	0	0
File System	dilks	clas12	11	29	0	0
Lustre	gluex	halld	25	5	0	0
Cache	goproj4	halld-pro	702	0	0	0
Volatile	goproj6	halld-pro	966	80	0	0
Work	haoj	clas12	0	0	1	0
Usage History	hdbhatt	halldc	0	0	82	0
Tape Library	ihossain	halld	0	0	1	0
Jobs	jlawson	halld	486	0	0	0
Usage	ml	eic	0	1	0	0
Data Mover			6,438	2,629	589	2

```
[[jlawson@ifarm2401 ~/job_submission_out]$ ls
hits_root_files  log  slurmJobs
[[jlawson@ifarm2401 ~/job_submission_out]$ cd log
[[jlawson@ifarm2401 log]$ ls
slurm-30_deg_mix_pik_4000_events.err  slurm-60_deg_mix_pik_4000_events.err  slurm-90_deg_mix_pik_4000_events.err
slurm-30_deg_mix_pik_4000_events.out  slurm-60_deg_mix_pik_4000_events.out  slurm-90_deg_mix_pik_4000_events.out
[jlawson@ifarm2401 log]$
```

# Path in the Prism Hit Pattern (Using -c 2031)



```
root [32] tree1->Draw("PrtEvent.fHitArray.fPosition.Px():PrtEvent.fHitArray.fPosition.Py()", "PrtEvent.fHitArray.fPathInPrzm==3", "same")
Info in <TCanvas::MakeDefCanvas>: created default TCanvas with name Canvas_1_n6
(long long) 48085
root [33] tree1->Draw("PrtEvent.fHitArray.fPosition.Px():PrtEvent.fHitArray.fPosition.Py()", "PrtEvent.fHitArray.fPathInPrzm==3", "same")
(long long) 48085
root [34] tree1->Draw("PrtEvent.fHitArray.fPosition.Px():PrtEvent.fHitArray.fPosition.Py()", "PrtEvent.fHitArray.fPathInPrzm==0", "")
(long long) 44375
root [35] tree1->Draw("PrtEvent.fHitArray.fPosition.Px():PrtEvent.fHitArray.fPosition.Py()", "PrtEvent.fHitArray.fPathInPrzm==0", "")
Info in <TCanvas::MakeDefCanvas>: created default TCanvas with name Canvas_1
(long long) 44375
root [36] tree1->Draw("PrtEvent.fHitArray.fPosition.Px():PrtEvent.fHitArray.fPosition.Py()", "PrtEvent.fHitArray.fPathInPrzm==3", "same")
(long long) 48085
root [37] tree1->Draw("PrtEvent.fHitArray.fPosition.Px():PrtEvent.fHitArray.fPosition.Py()", "PrtEvent.fHitArray.fPathInPrzm==31", "same")
(long long) 11451
root [38] tree1->Draw("PrtEvent.fHitArray.fPosition.Px():PrtEvent.fHitArray.fPosition.Py()", "PrtEvent.fHitArray.fPathInPrzm==32", "same")
(long long) 15767
root [39] []
```

## Prism Path:

Black = Direct

Purple = Bottom

Red = Bottom, Right

Orange = Bottom, Left

- Add more paths in the prism to get a more complete understanding of the ring folding
- Work more on saving the time difference histograms as root files
- Discuss future plans for a more systematic study using ifarm's higher event number limits

# The Rest of the Week

