

# Analysis Meeting

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## Outline

- *Sivers Asymmetry* Extraction
- MC Tracking

# From Kun's talk on schedule & budget

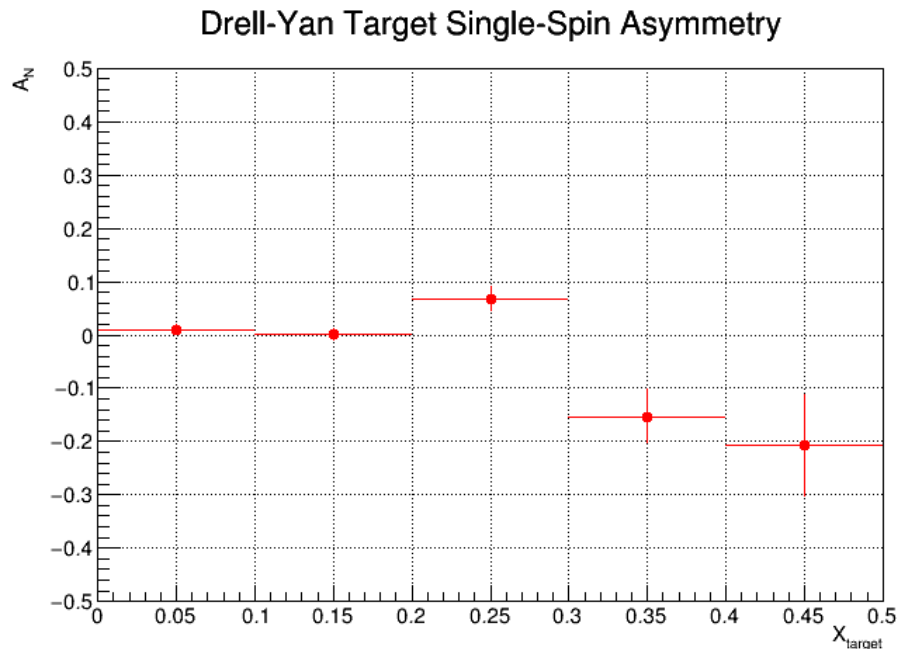
- Two milestones we need to achieve:
  - Demonstration of experimental readiness (sans target) by the end of this year
    - Spectrometer fully up and running with FPGA-based cosmic ray trigger
    - Online/Offline software ready for data - mock data challenge
  - Demonstration of polarized target operation by the end of this beam cycle
    - Preliminary asymmetry measurement if we are able to run with target cold and polarized
    - Zero asymmetry with systematic understood if we can only run target unpolarized

# Summary from the last meeting

- The sivers asymmetry framework (Fourier Projection and MLM) are established for the generated MC events
- A bias asymmetry seen toward high- $x$  for the accepted events
- We need to understand the source of this bias asymmetry

# What I learned

- The geometry that I put in the simulation was not the perfect geometry
- It has alignment and calibration file (\*.opts)
- It might be the source of the asymmetry

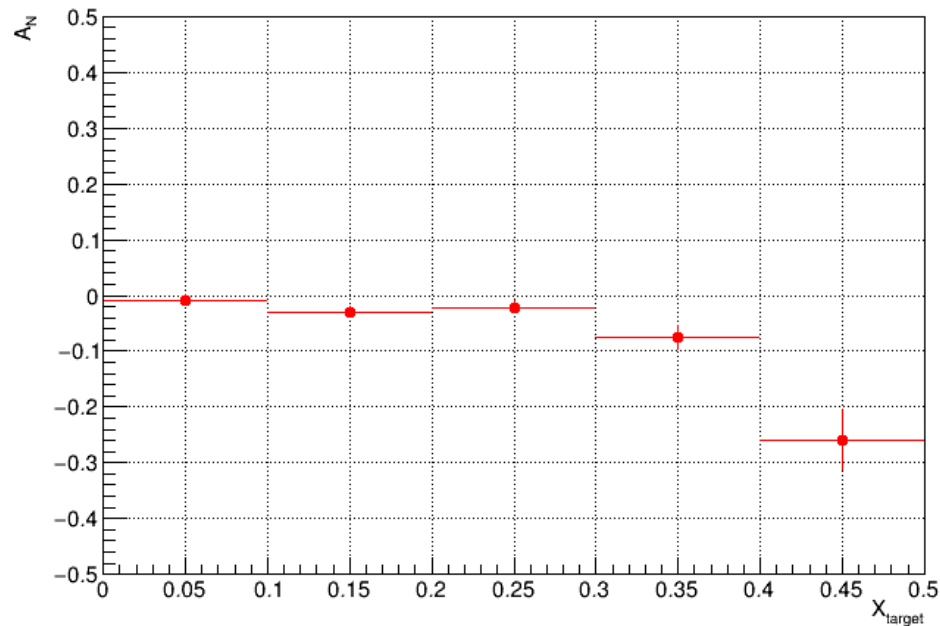


The asymmetry using different opts file

# What I learned

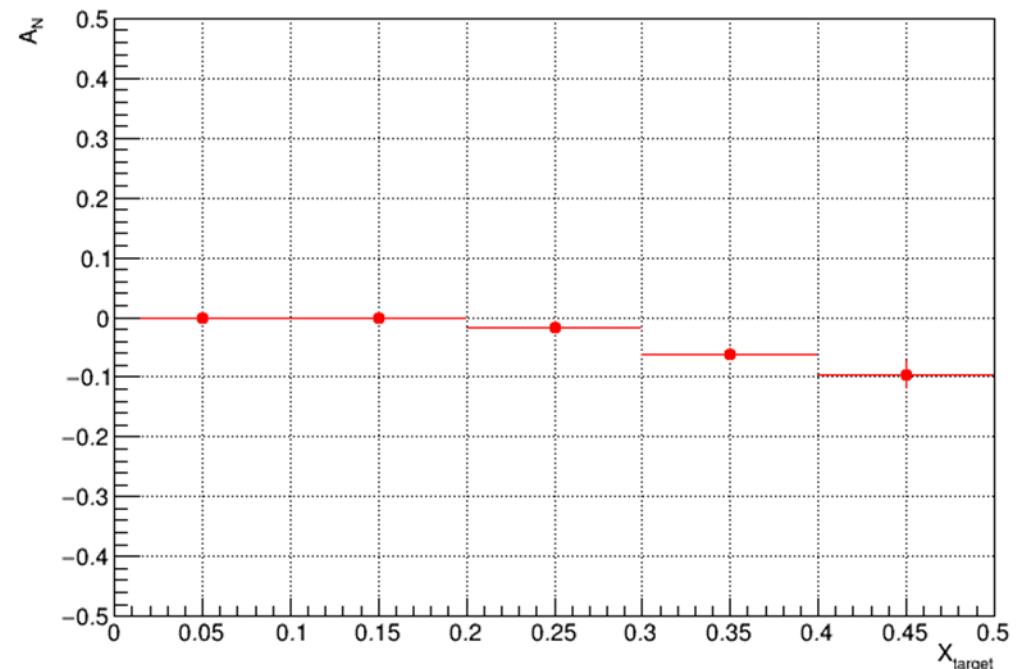
- I turn off the alignment -> SetIdealGeom 1
- It does not solve the problem (the statistics is less)
- There is another source of the asymmetry

Drell-Yan Target Single-Spin Asymmetry



The asymmetry using ideal geom

Drell-Yan Target Single-Spin Asymmetry



Previous results using run7.opts

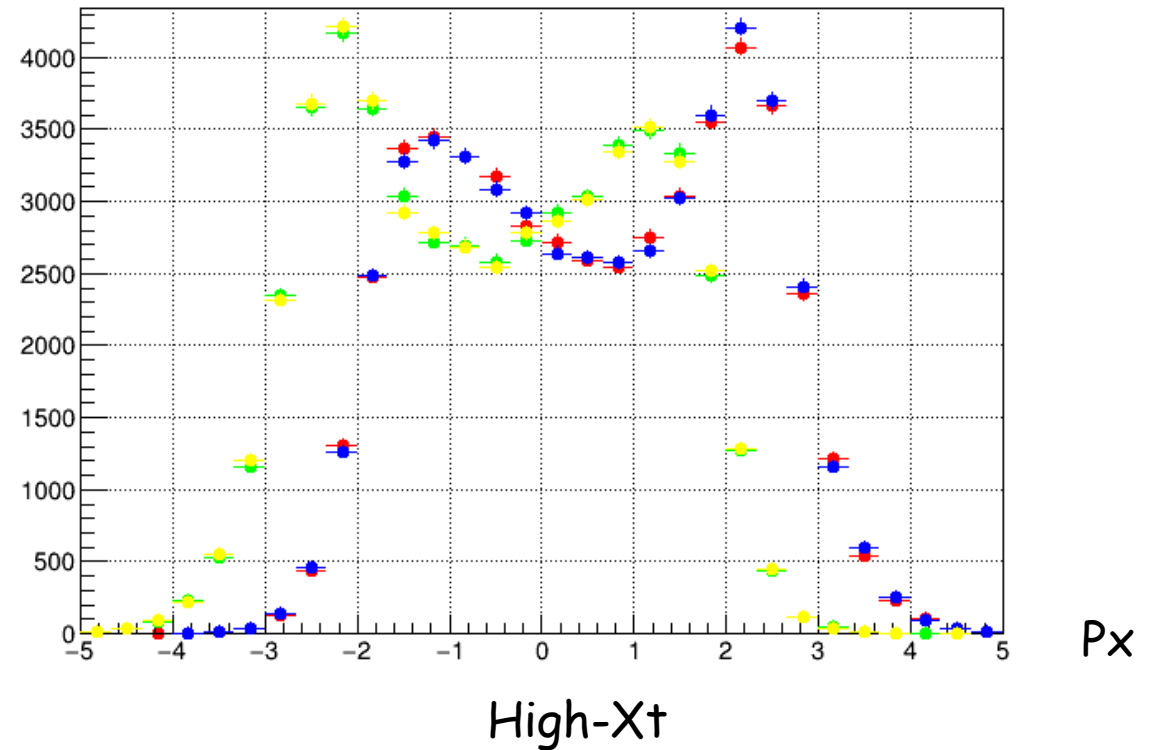
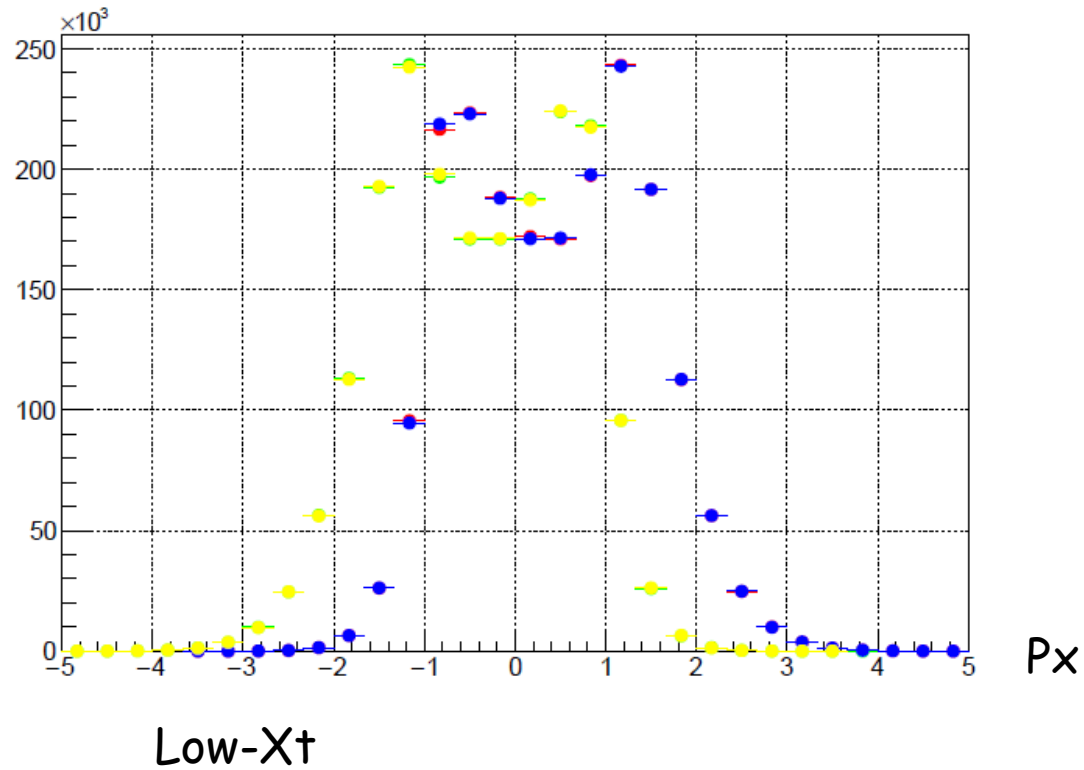
# What I learned

- The Fmag and Kmag are not perfectly homogen
- Sometimes the fluctuation is in the order of  $10^{-3}$ :

•	-292.1	-139.7	342.9	-0.000883741	0.00345773	0.000600467
•	-292.1	-139.7	355.6	-0.000784829	0.00349186	0.000870889
•	-292.1	-139.7	368.3	-0.0006926	0.00351184	0.00105759
•	-292.1	-139.7	381	-0.0006088	0.00351951	0.00116752
•	-292.1	-139.7	393.7	-0.000534325	0.00351672	0.00121079
•	-292.1	-139.7	406.4	-0.000469782	0.00350542	0.00119871
•	-292.1	-139.7	419.1	-0.000414662	0.00348837	0.00114002
•	-292.1	-139.7	431.8	-0.000368367	0.00346802	0.00104095
•	-292.1	-139.7	444.5	-0.000330446	0.00344658	0.000911095

# What I learned

- The momentum distribution at low- $x_t$  and high- $x_t$  indicate that the Field distribution might cause the bias asymmetry at high- $x_t$



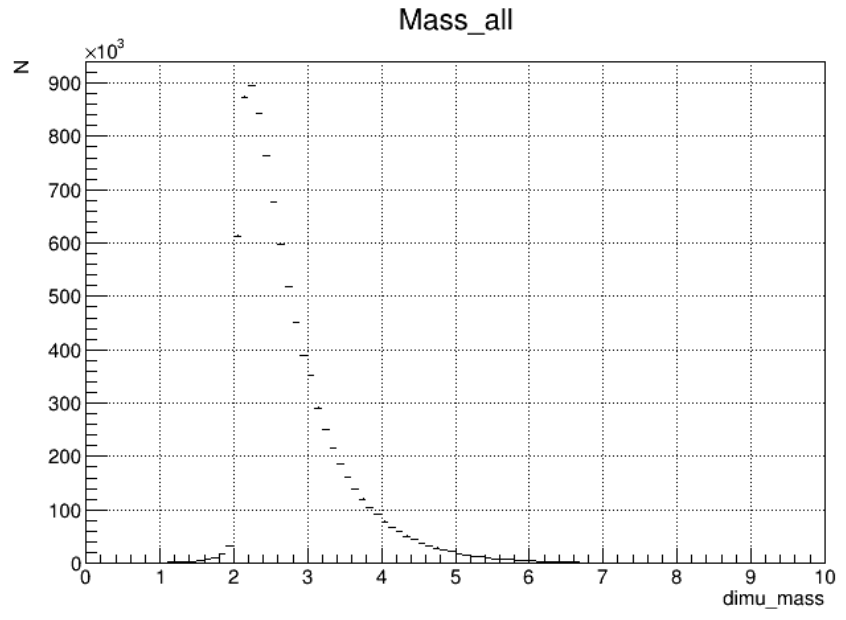


## MC tracking

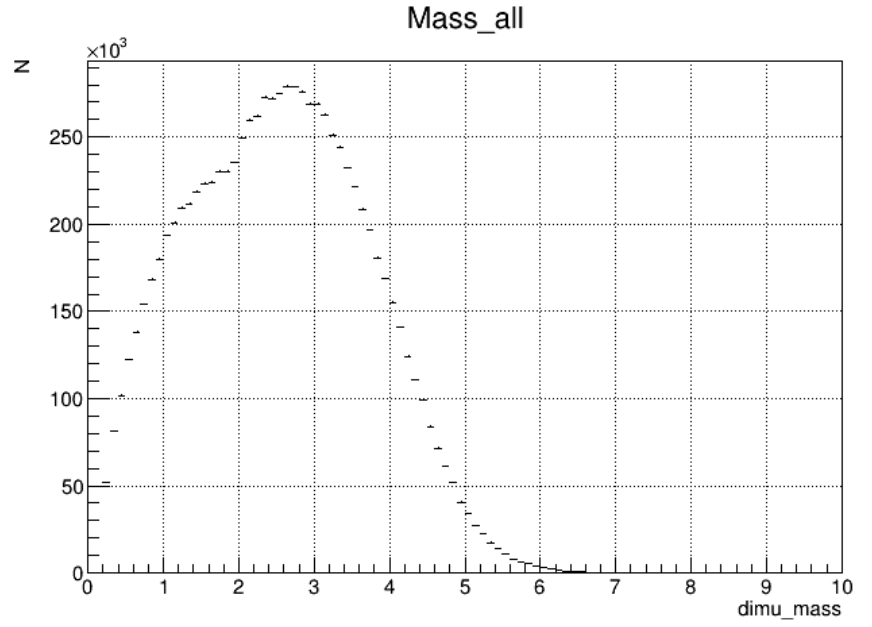
- Resolution
- Efficiency

Drell-Yan

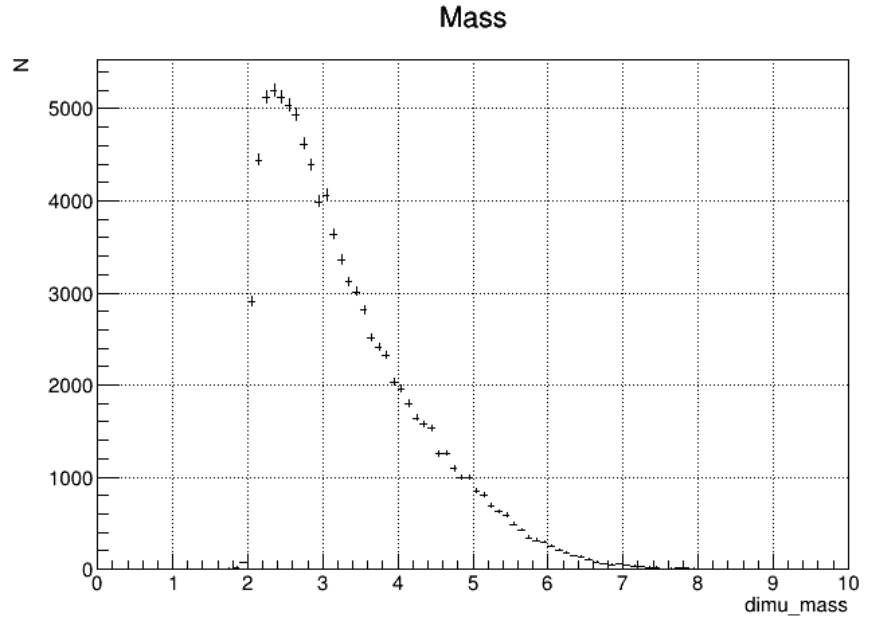
Truth



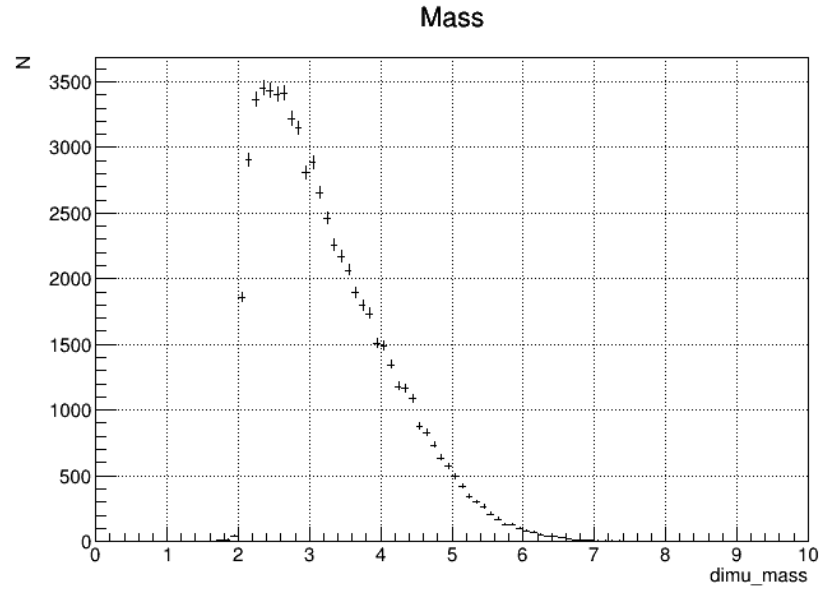
Reco



All



Ntrack\_hodo > 1

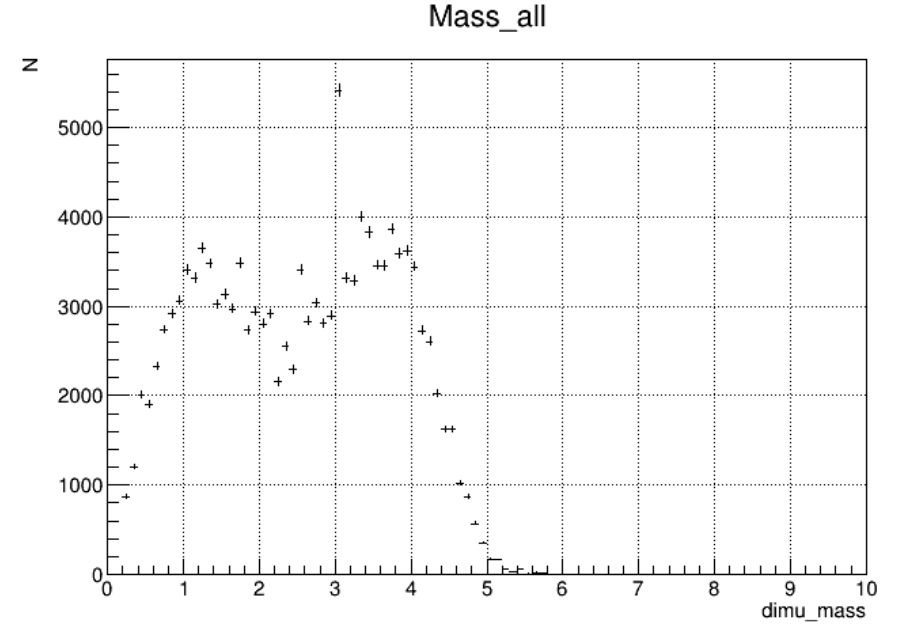
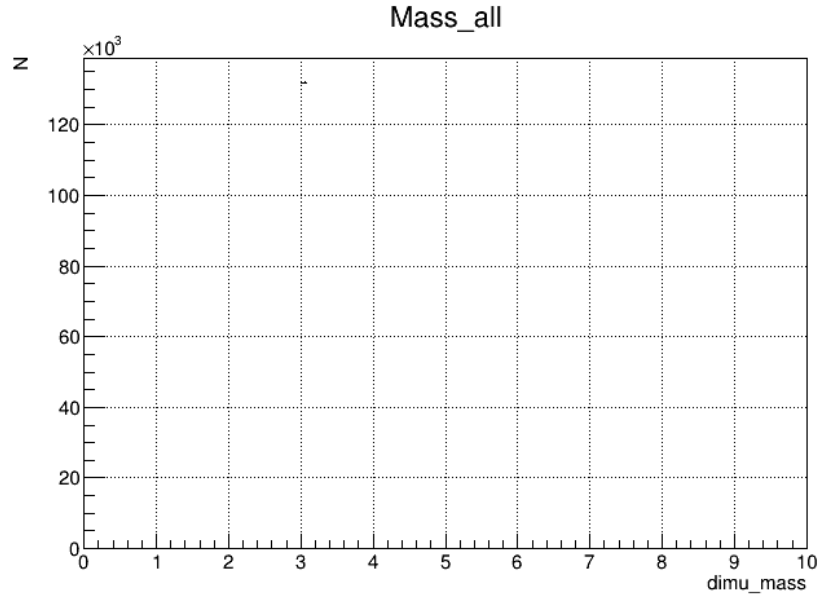


J/Psi

Truth

Reco

All



Ntrack\_hodo > 1

