

# Full simulations look

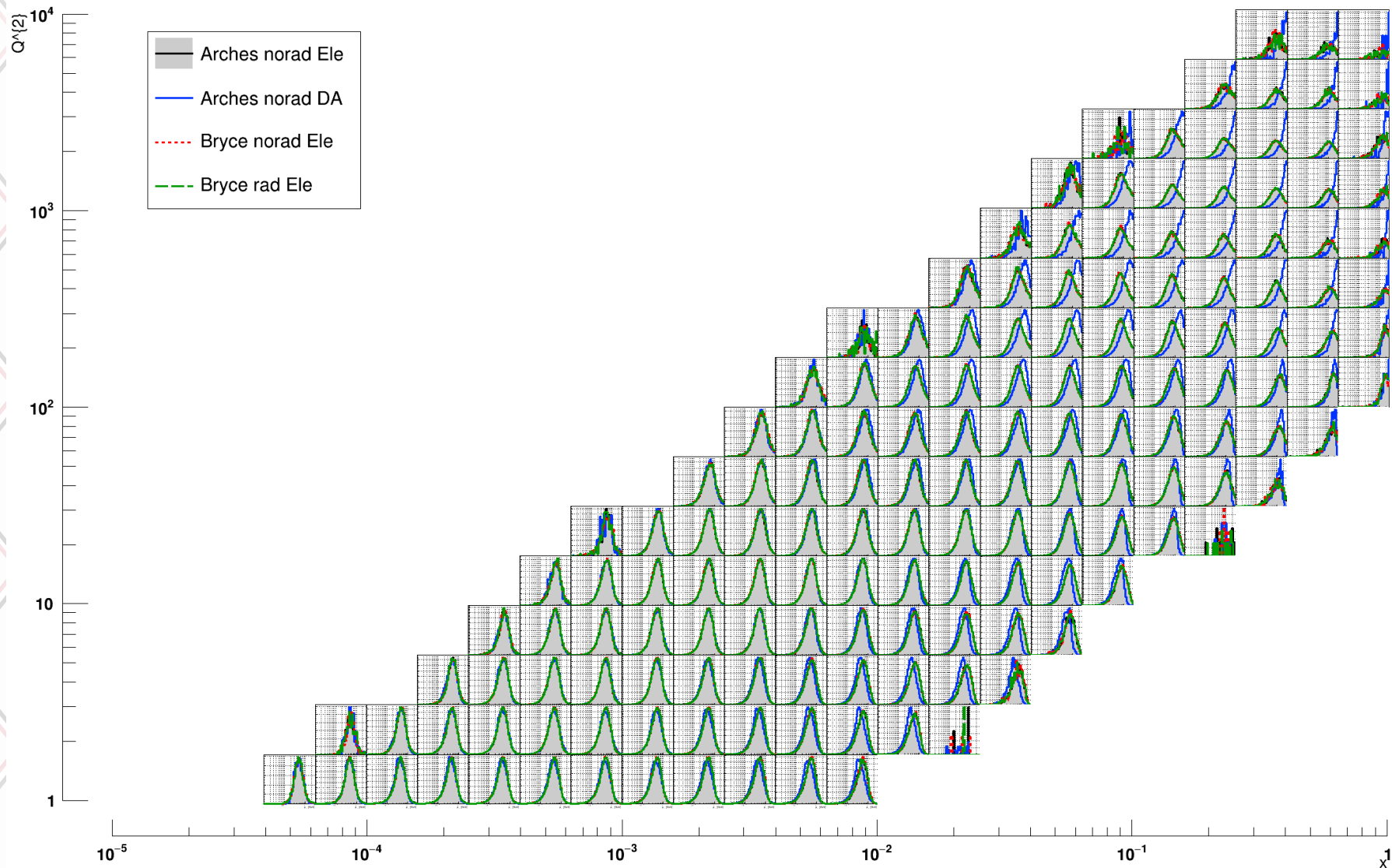
**SIDIS PWG meeting**  
**January 24, 2023,**  
**Ralf Seidl (RIKEN)**

# Simulation status

- ePic full simulations of highest/lowest energy are available on S3:
- *S3/eictest/EPIC/RECO/22.11.3/[epic\_arches,epic\_brycecanyon]/SIDIS/pythia6/ep\_[18x275,5x41]/*
- *After recent fix to epic-analysis one can run over it streaming from S3*
- *Logfiles show only around 40M events instead of full 65M, occasionally streaming errors, but mostly ok*

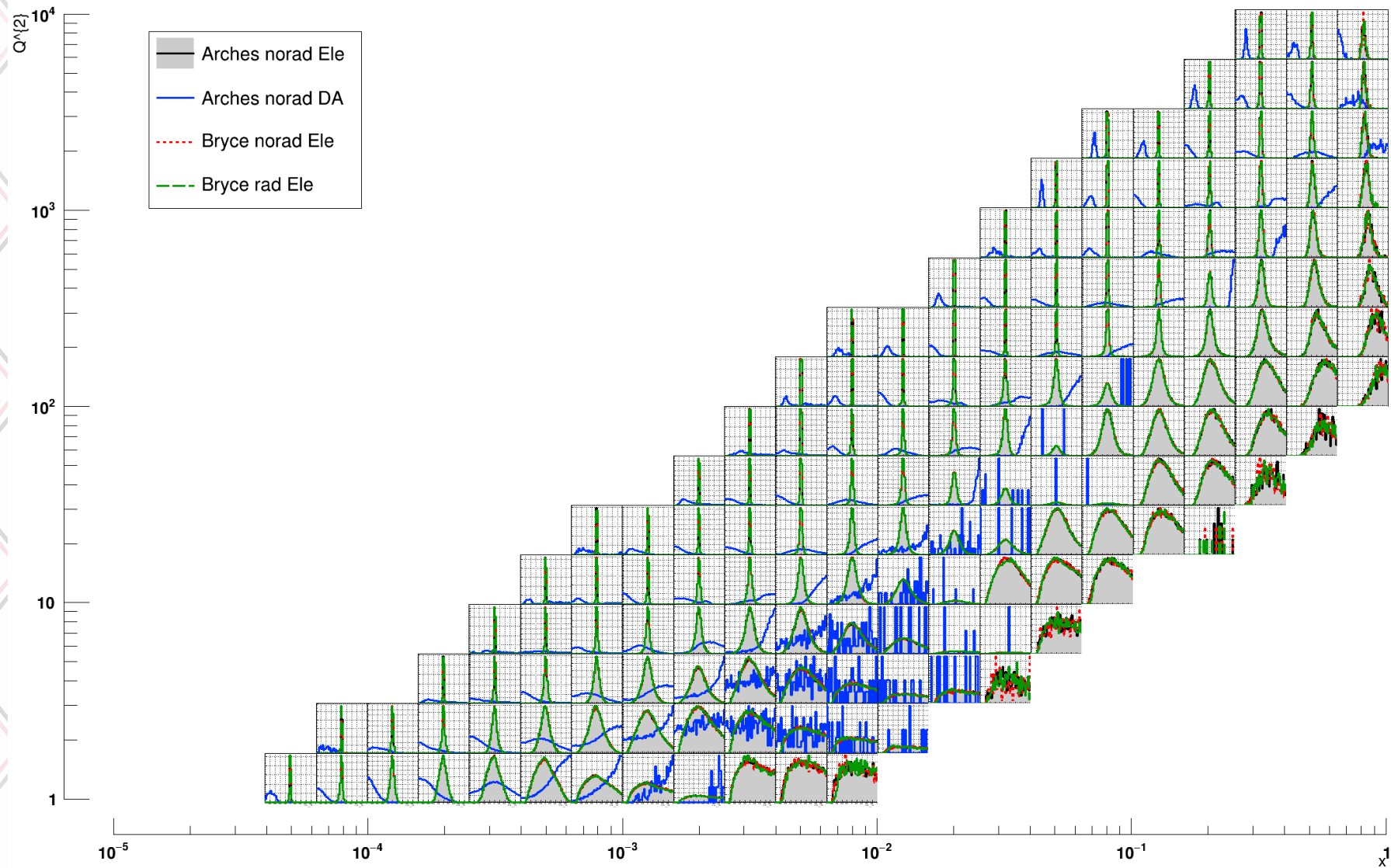
| Energy          | Q2min | Q2max  | Xsec[pb] | #gen files | #events | Lumi [pb-1] |
|-----------------|-------|--------|----------|------------|---------|-------------|
| noradcor.18x275 | 1     | 10     | 8.09E+05 | 20         | 40M     | 4.95E+01    |
| noradcor.18x275 | 10    | 100    | 7.09E+04 | 20         | 20M     | 2.82E+02    |
| noradcor.18x275 | 100   | 1000   | 3.03E+03 | 40         | 4M      | 1.32E+03    |
| noradcor.18x275 | 1000  | 100000 | 5.70E+01 | 20         | 1M      | 1.76E+04    |
| noradcor.10x100 | 1     | 10     | 5.39E+05 | 20         | 40M     | 7.42E+01    |
| noradcor.10x100 | 10    | 100    | 3.96E+04 | 20         | 20M     | 5.05E+02    |
| noradcor.10x100 | 100   | 1000   | 1.20E+03 | 20         | 2M      | 1.67E+03    |
| noradcor.10x100 | 1000  | 100000 | 4.29E+00 | 20         | 1M      | 2.33E+05    |
| noradcor.5x100  | 1     | 10     | 4.46E+05 | 20         | 40M     | 8.96E+01    |
| noradcor.5x100  | 10    | 100    | 2.90E+04 | 20         | 20M     | 6.89E+02    |
| noradcor.5x100  | 100   | 1000   | 6.47E+02 | 20         | 2M      | 3.09E+03    |
| noradcor.5x100  | 1000  | 100000 | 2.09E-01 | 20         | 0.2M    | 9.56E+05    |
| noradcor.5x41   | 1     | 10     | 3.43E+05 | 20         | 40M     | 1.17E+02    |
| noradcor.5x41   | 10    | 100    | 1.94E+04 | 20         | 20M     | 1.03E+03    |
| noradcor.5x41   | 100   | 1000   | 2.22E+02 | 20         | 2M      | 9.01E+03    |
| radcor.18x275   | 1     | 10     | 8.54E+05 | 20         | 40M     | 4.68E+01    |
| radcor.18x275   | 10    | 100    | 1.46E+05 | 20         | 20M     | 1.37E+02    |
| radcor.18x275   | 100   | 1000   | 6.92E+03 | 40         | 4M      | 5.78E+02    |
| radcor.18x275   | 1000  | 100000 | 1.21E+02 | 20         | 1M      | 8.25E+03    |
| radcor.5x41     | 1     | 10     | 3.73E+05 | 200        | 20M     | 5.36E+01    |
| radcor.5x41     | 10    | 100    | 2.29E+04 | 1000       | 10M     | 4.37E+02    |
| radcor.5x41     | 100   | 1000   | 2.58E+02 | 20         | 2M      | 7.76E+03    |

# Coverage pT



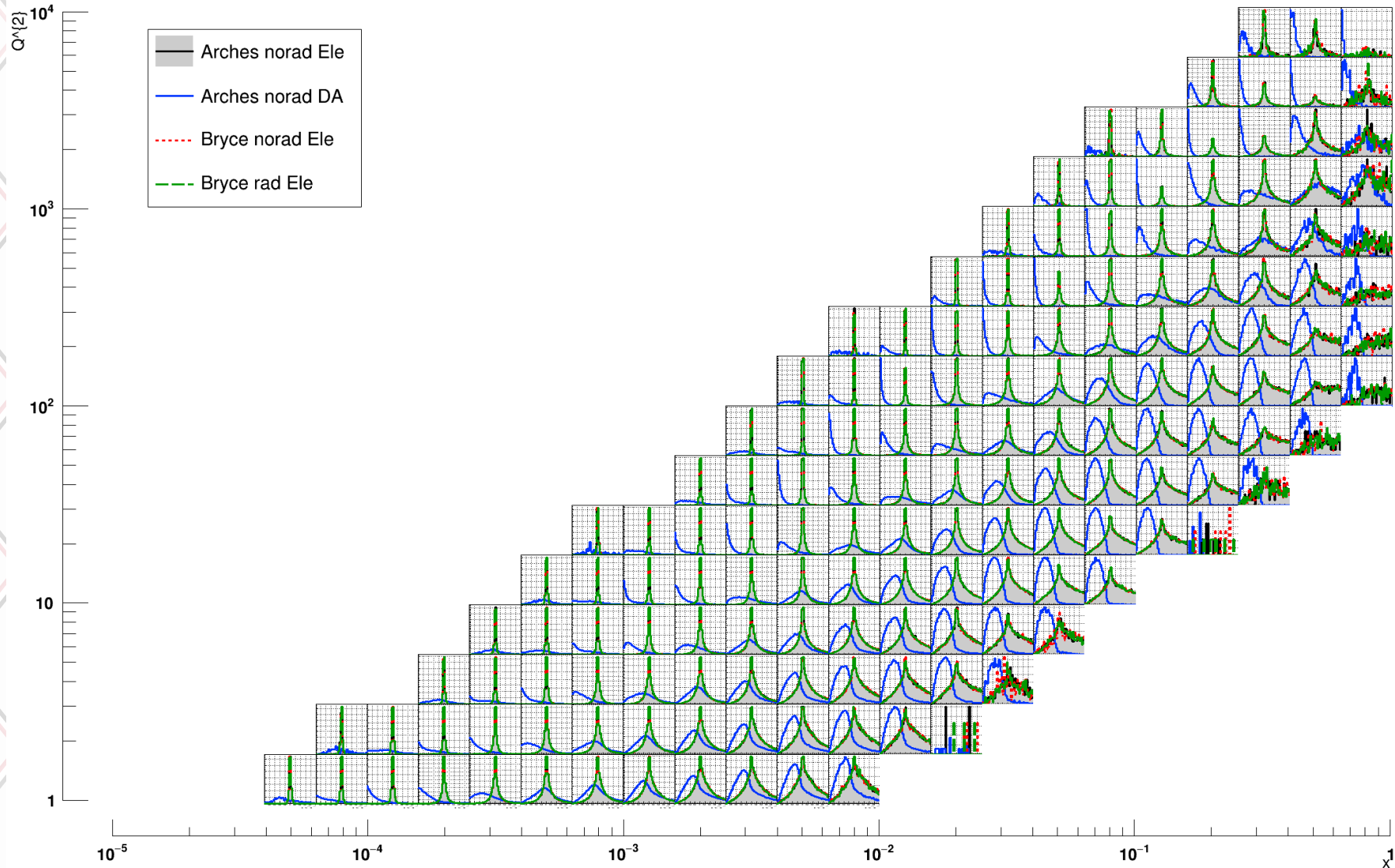


# Resolutions x

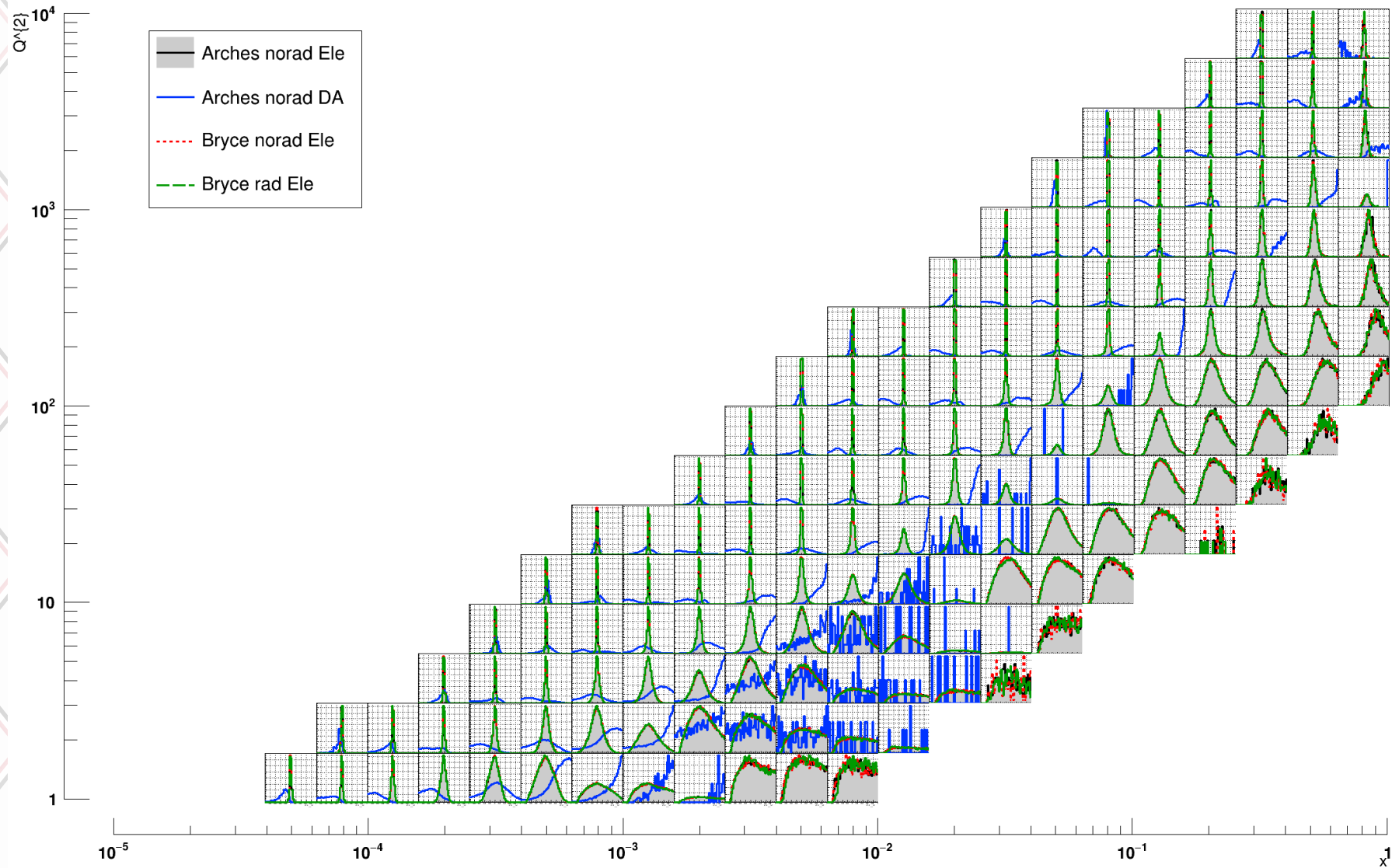




# Resolutions pT

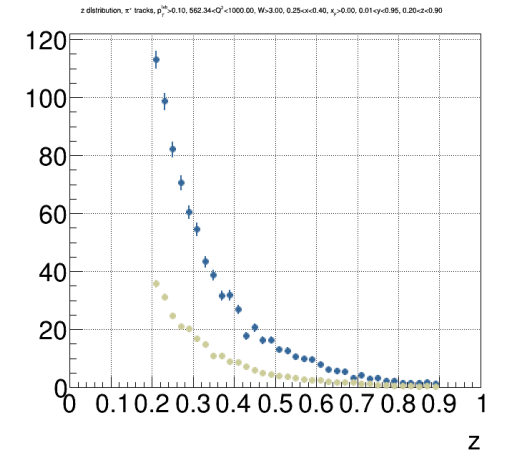
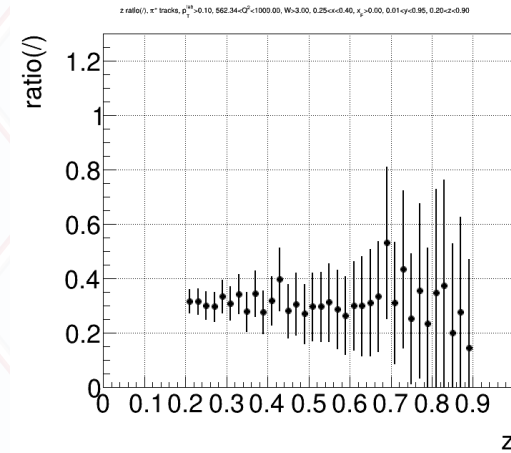
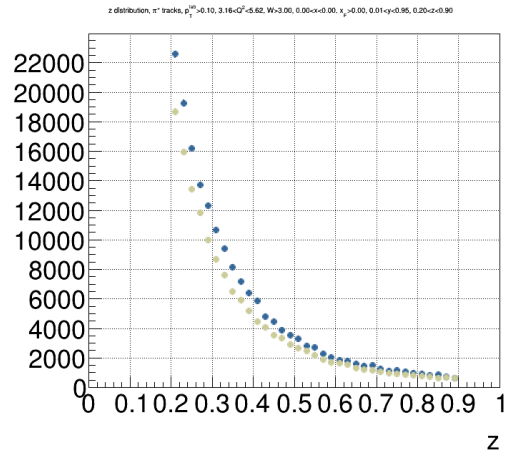
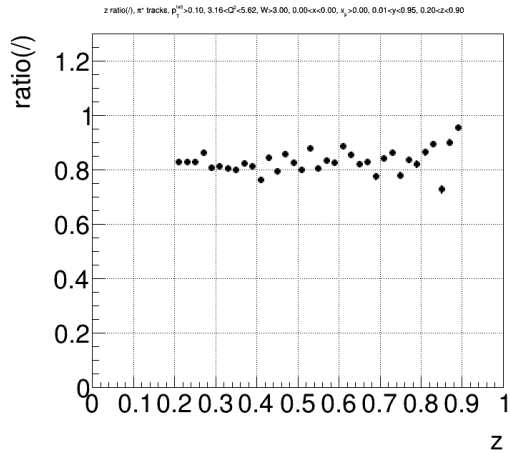
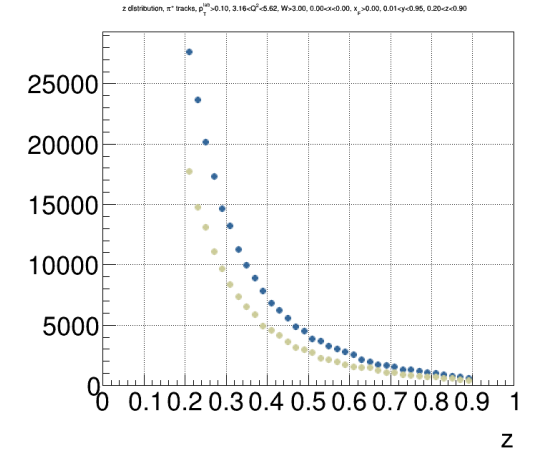
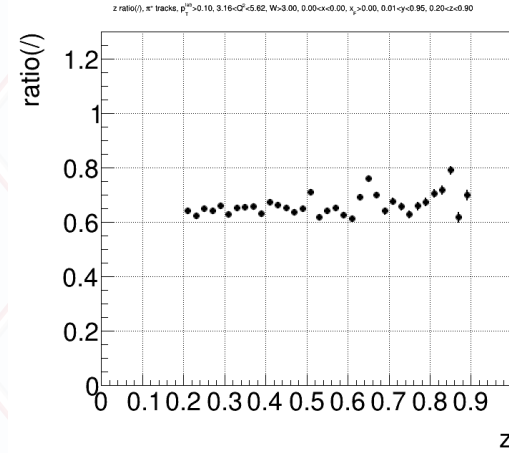


# Resolutions z



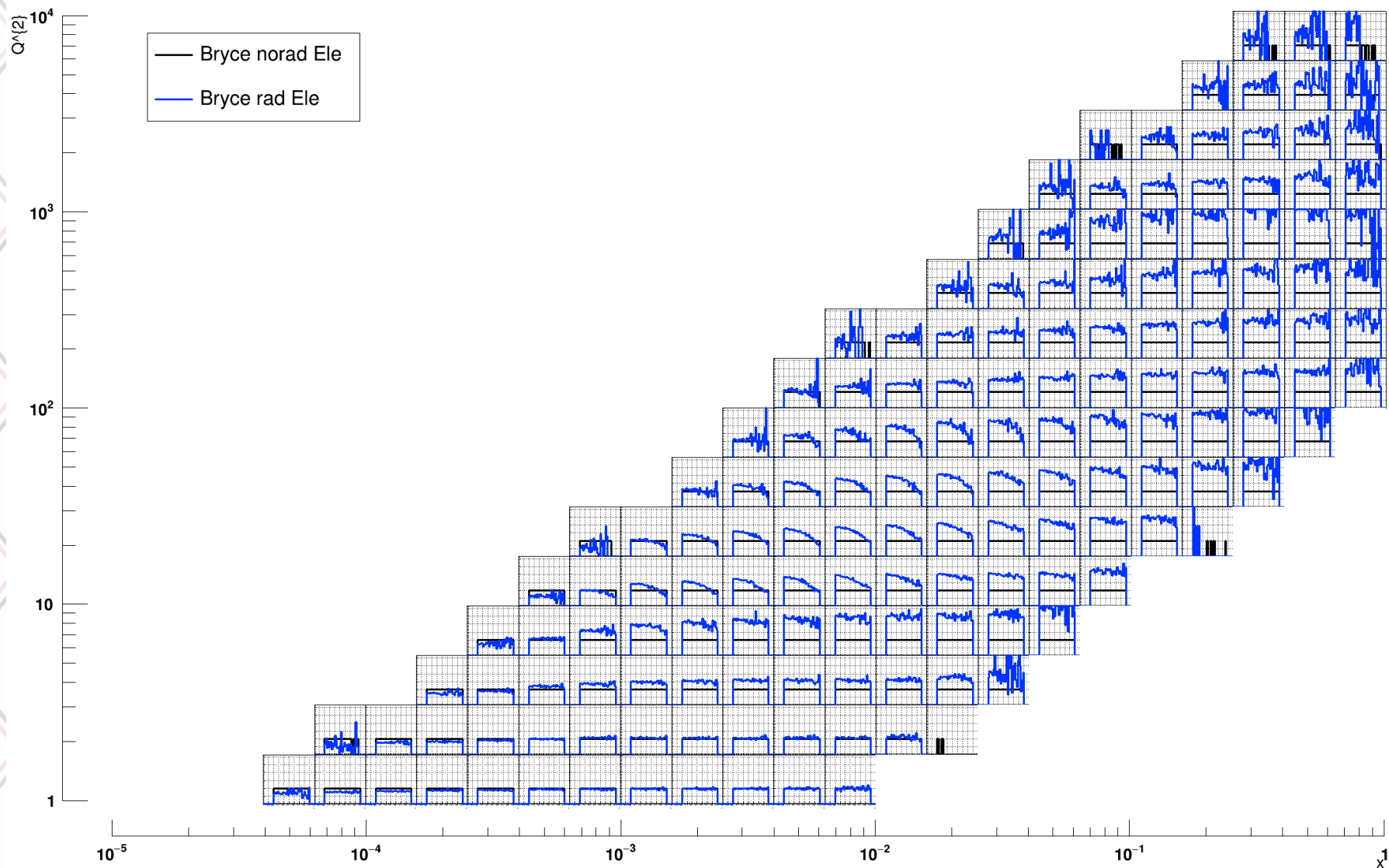
# NoRadcor/radcor ratios z distribution

- Comparison of cross sections between radcor and noradcor

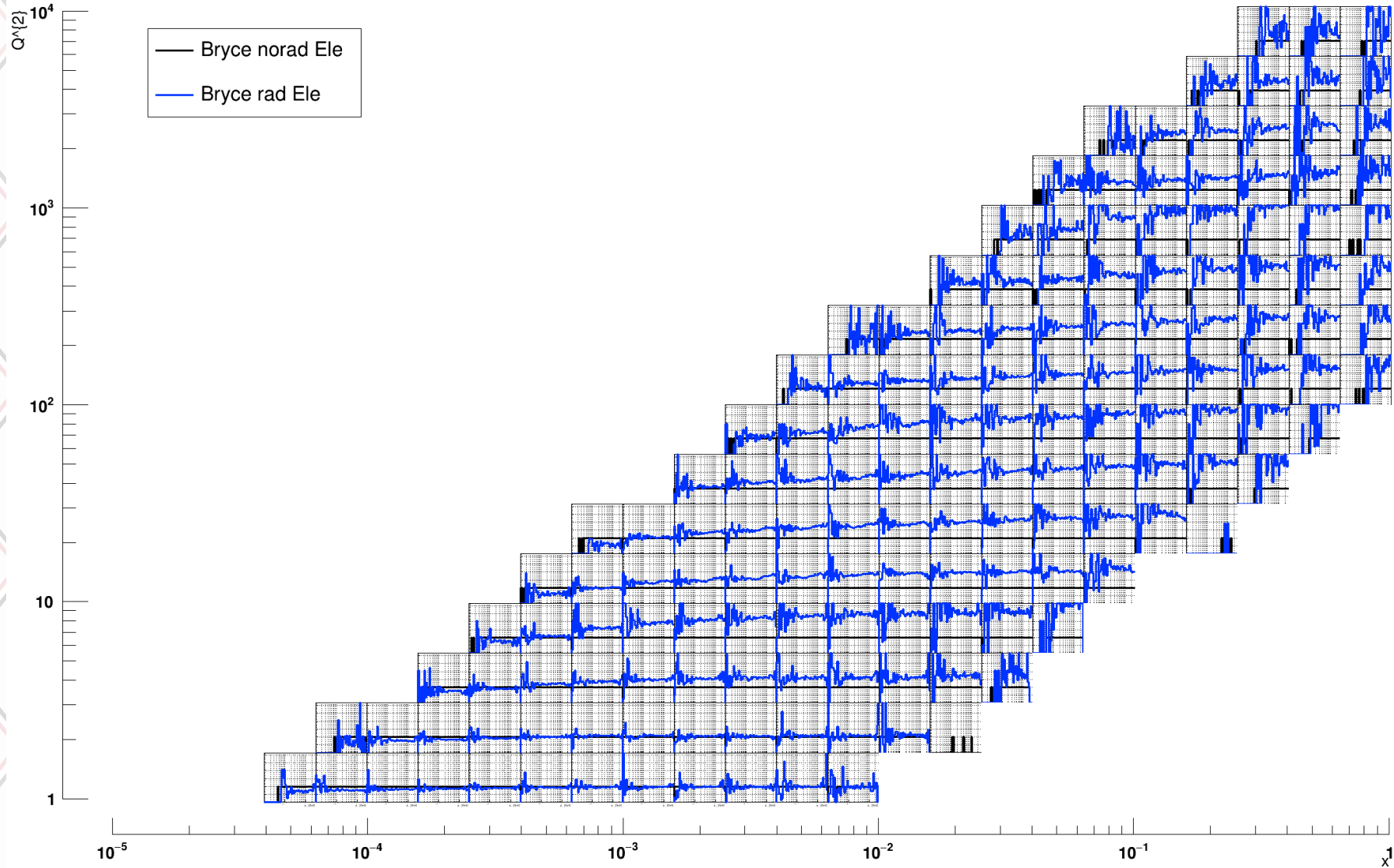




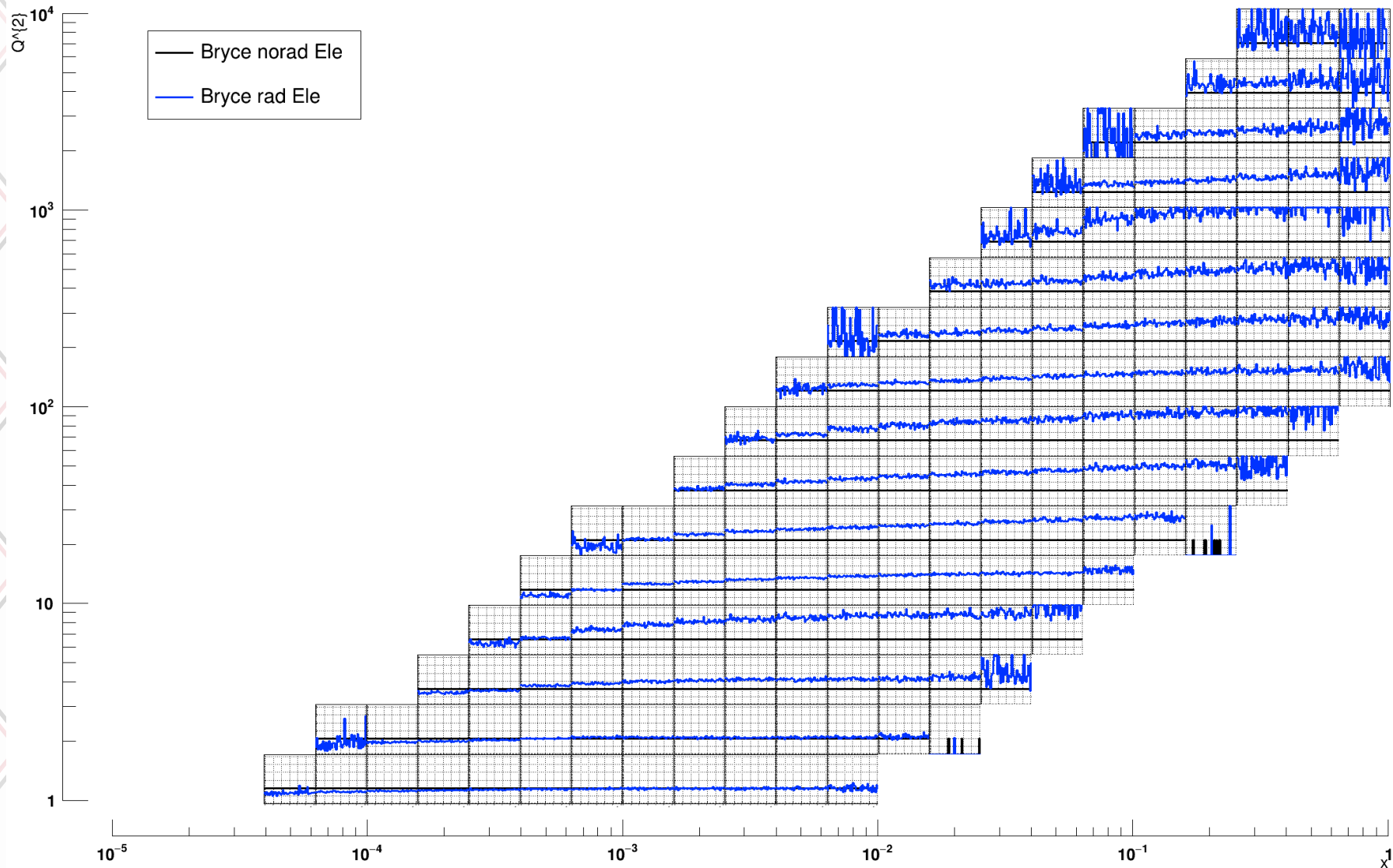
# Ratios for z over all bins



$p_T$



# Collins angle





# Summary

- Able to run over full simulations
- Added 2D binned ratio plots to Postprocessor (pull request pending)

## TODO:

- Clusters not implemented in AnalysisEpic → DA, JB methods not yet useful, Ele reconstruction tracking only so far
- Some additional histos that might be useful:
  - $x, Q^2$  in actual bin boundaries (ie 0.001 to 1 not particularly useful for binned comparisons)
  - 2D histos of  $\phi_H$  vs  $\phi_S$  → more reliable to extract Sivers/Collins etc than explicit projections to Sivers/Collins angles
  - More purities and smearing matrices