B0 Benchmarking with DVMP

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03-19-2024
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Experiment

- The simulation of ep->e’p’π^0 (10X100) for ePIC is now available.
- It is expected to be updated in the simulation campaign.
- The performance of the B0 spectrometer will be monitored when new simulation files are produced.
- It will also be monitored as a full reaction.

Files

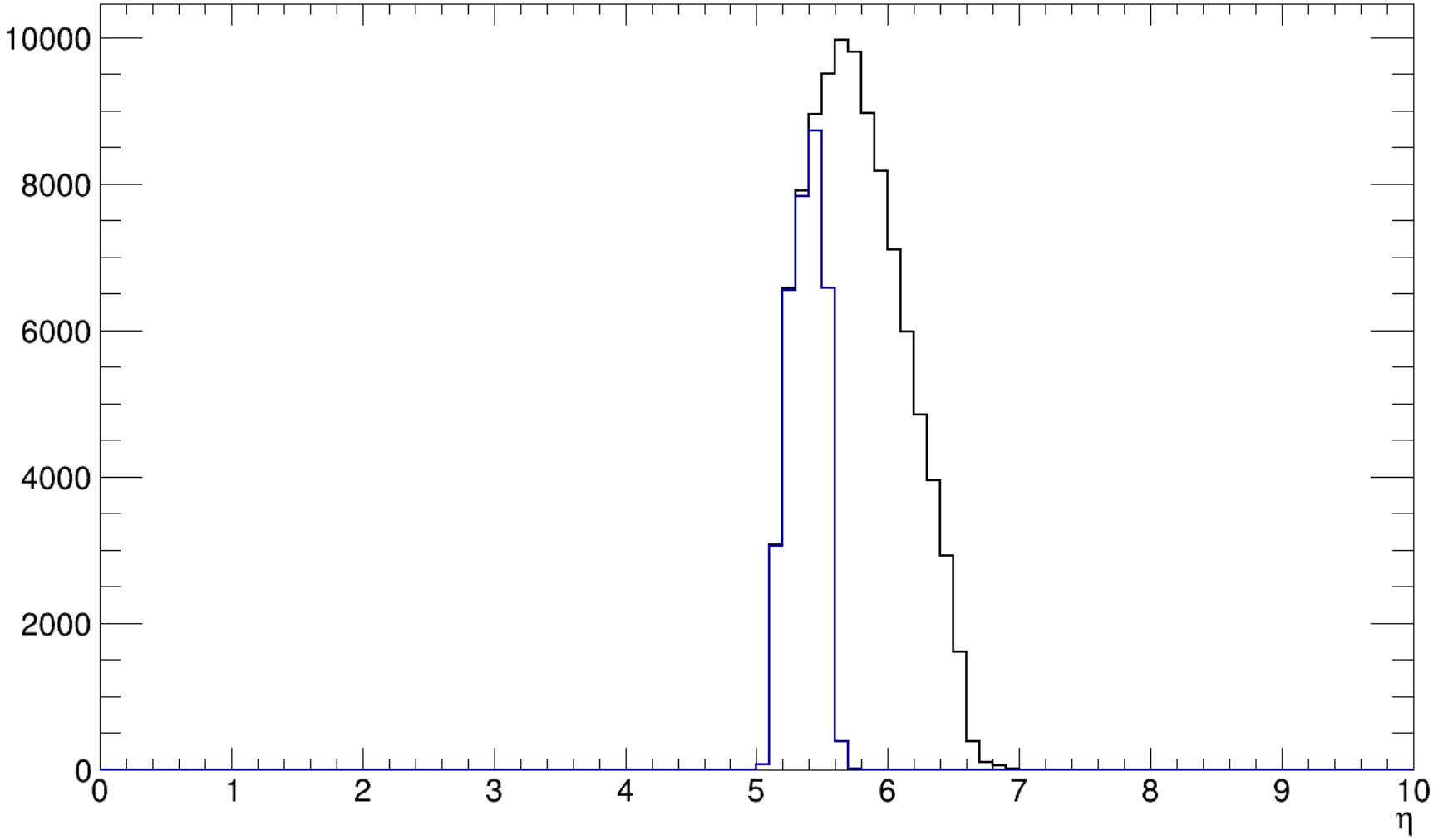
- Current using files from Alex’s Dropbox (S3 directory TBD)
  The total size is about 1.5Gb.

- Generator files: github.com/eic/DVMPdataset
  EPIC generator (used with the Athena Proposal)

- Afterburned with ip6_hiacc_100x10 setting.

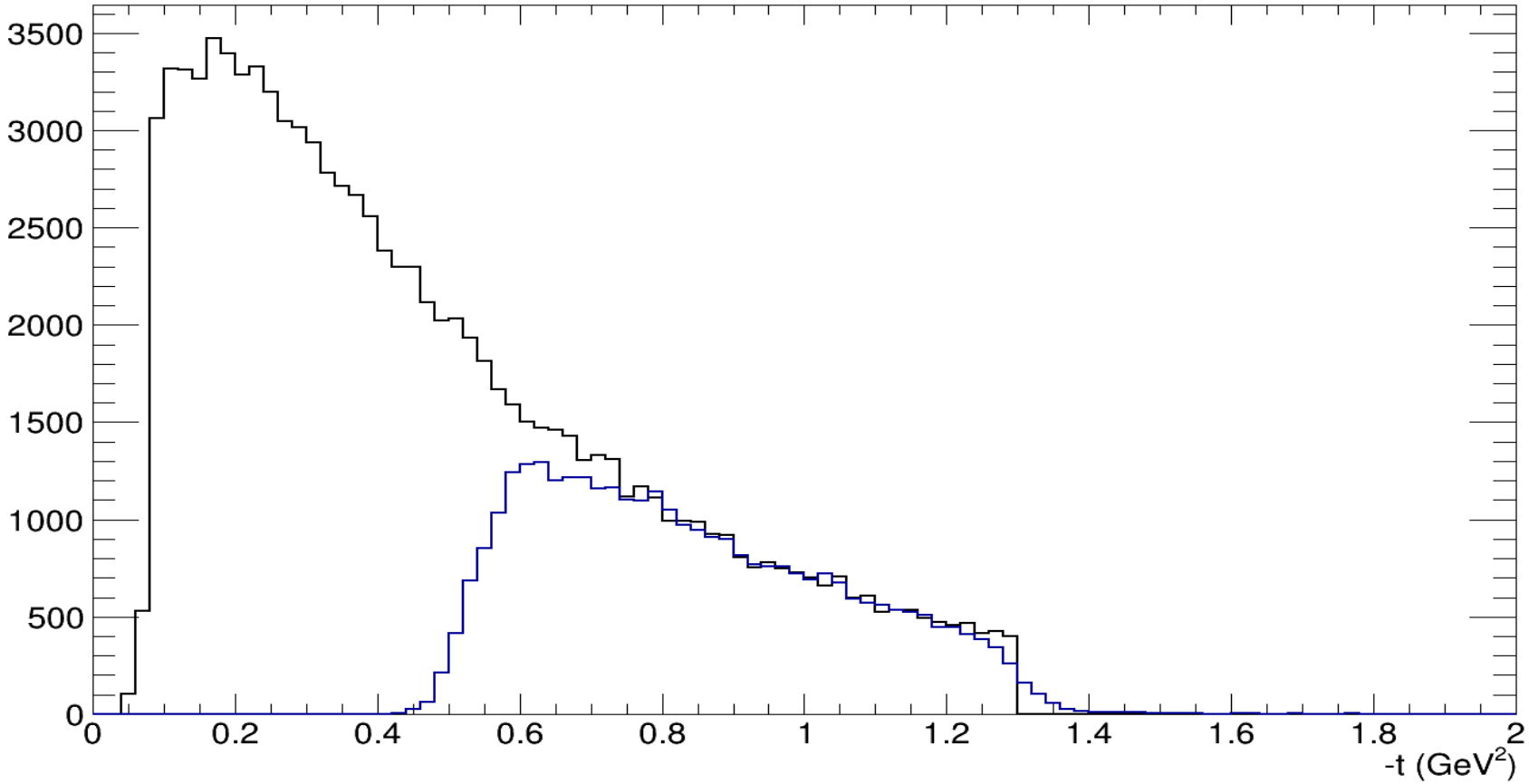
- 100k events have been generated.

Event Coverage



About 33% of the protons are reconstructed (B0 only so far).

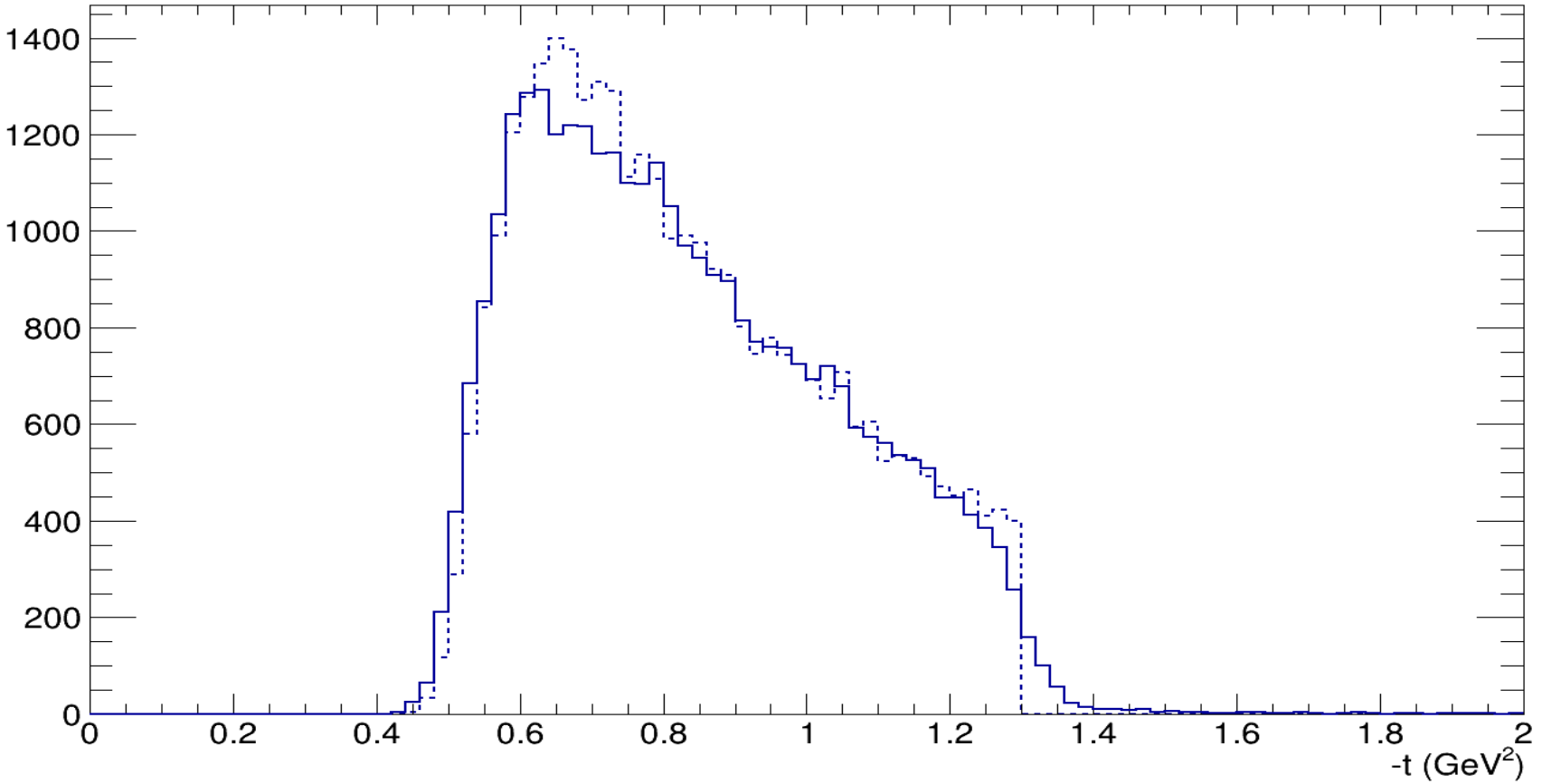
-t



The black curve indicates the generated -t distribution while the blue curve indicates the reconstructed one.

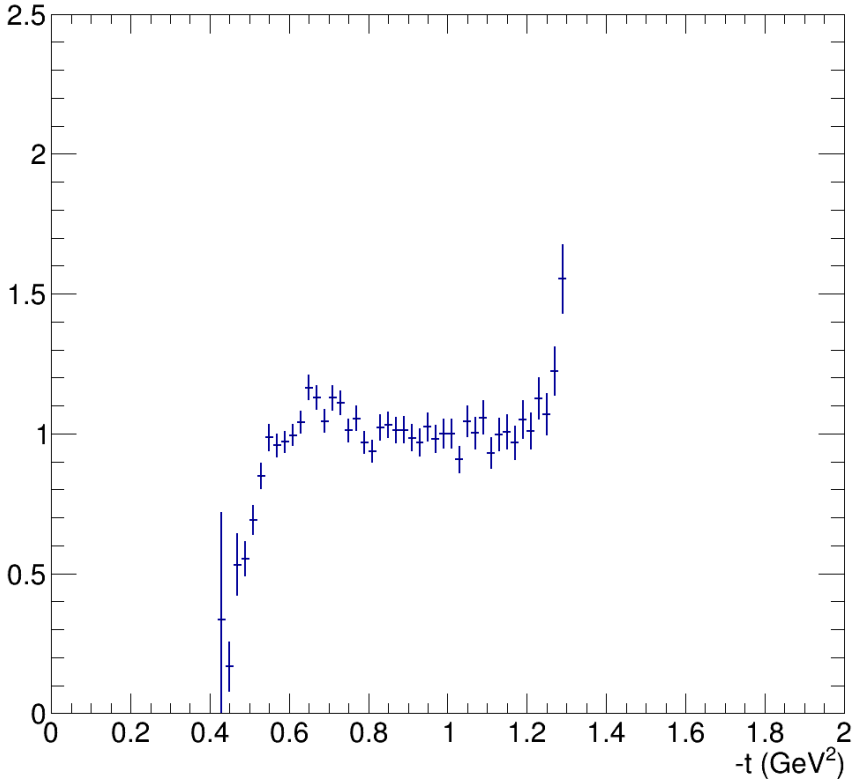
$$t = (p - p')^2$$

Associated and Reconstructed

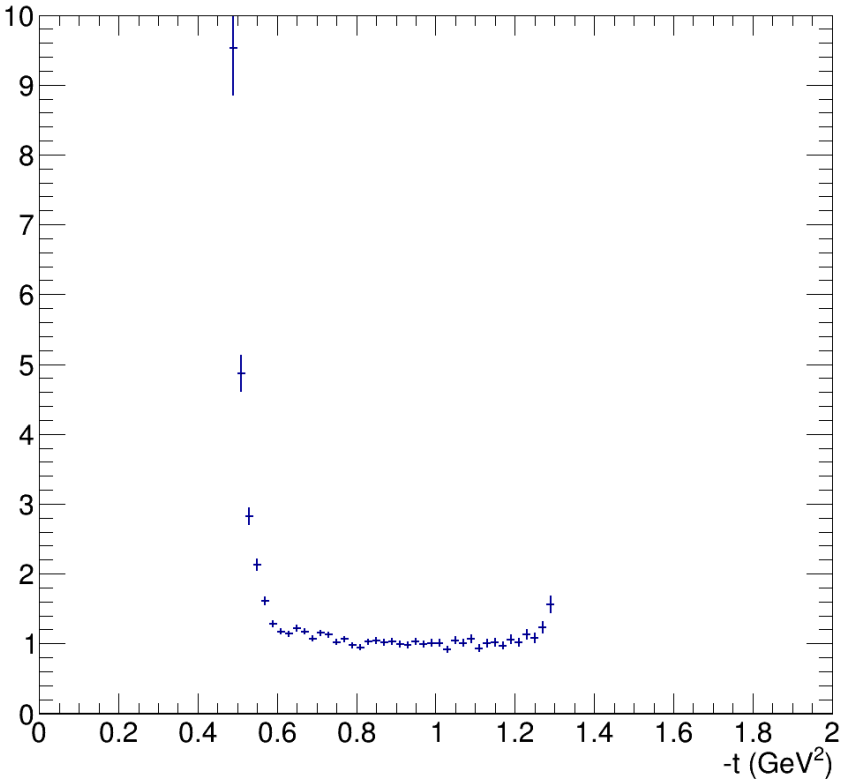


The associated curve (dashed) indicates generated events with corresponding reconstructed events available while the solid curve indicates the reconstructed ones.

Ratio

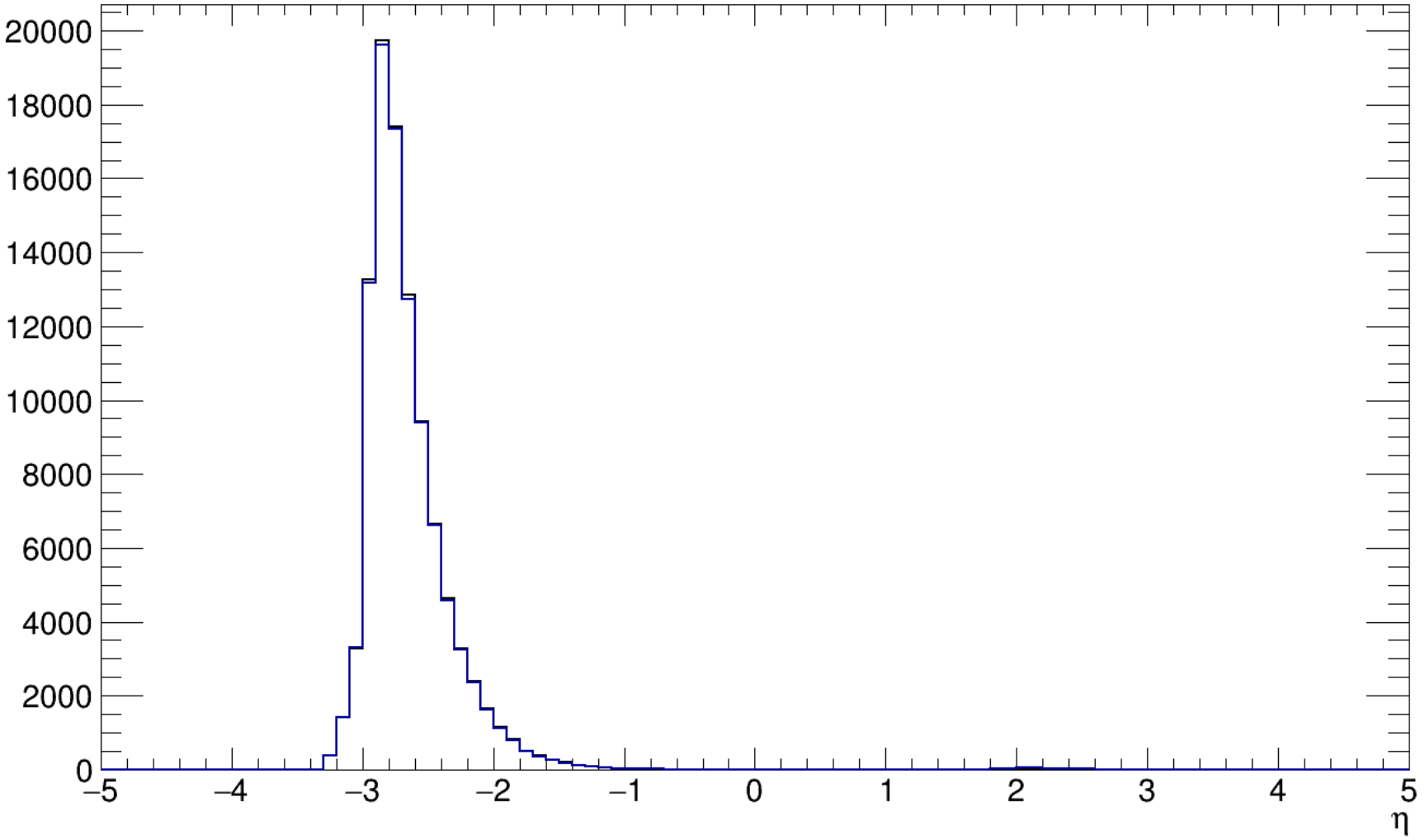


Associated/
Reconstructed



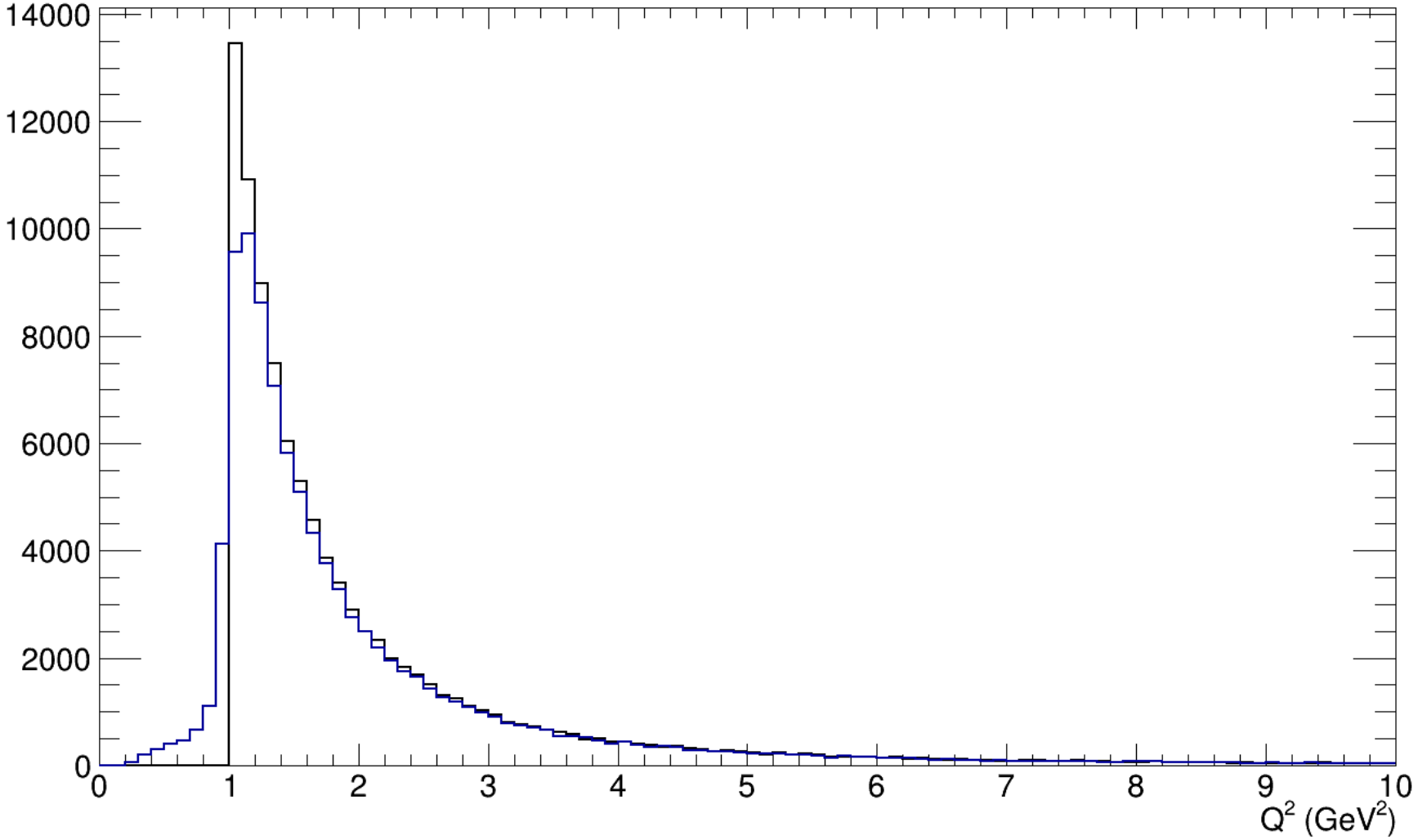
Generated/
Reconstructed

Electrons



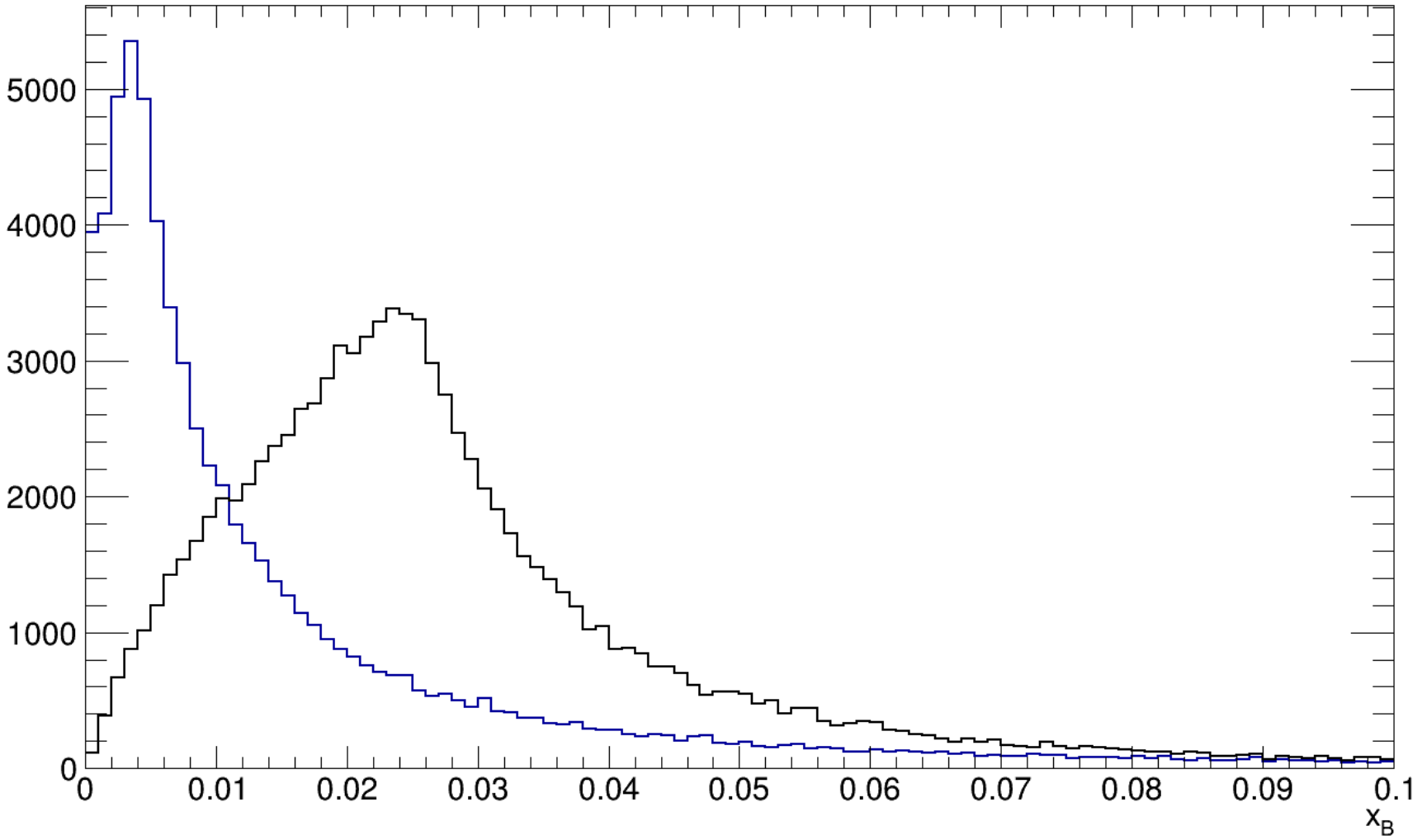
Black: Generated Blue: Reconstructed

Q^2



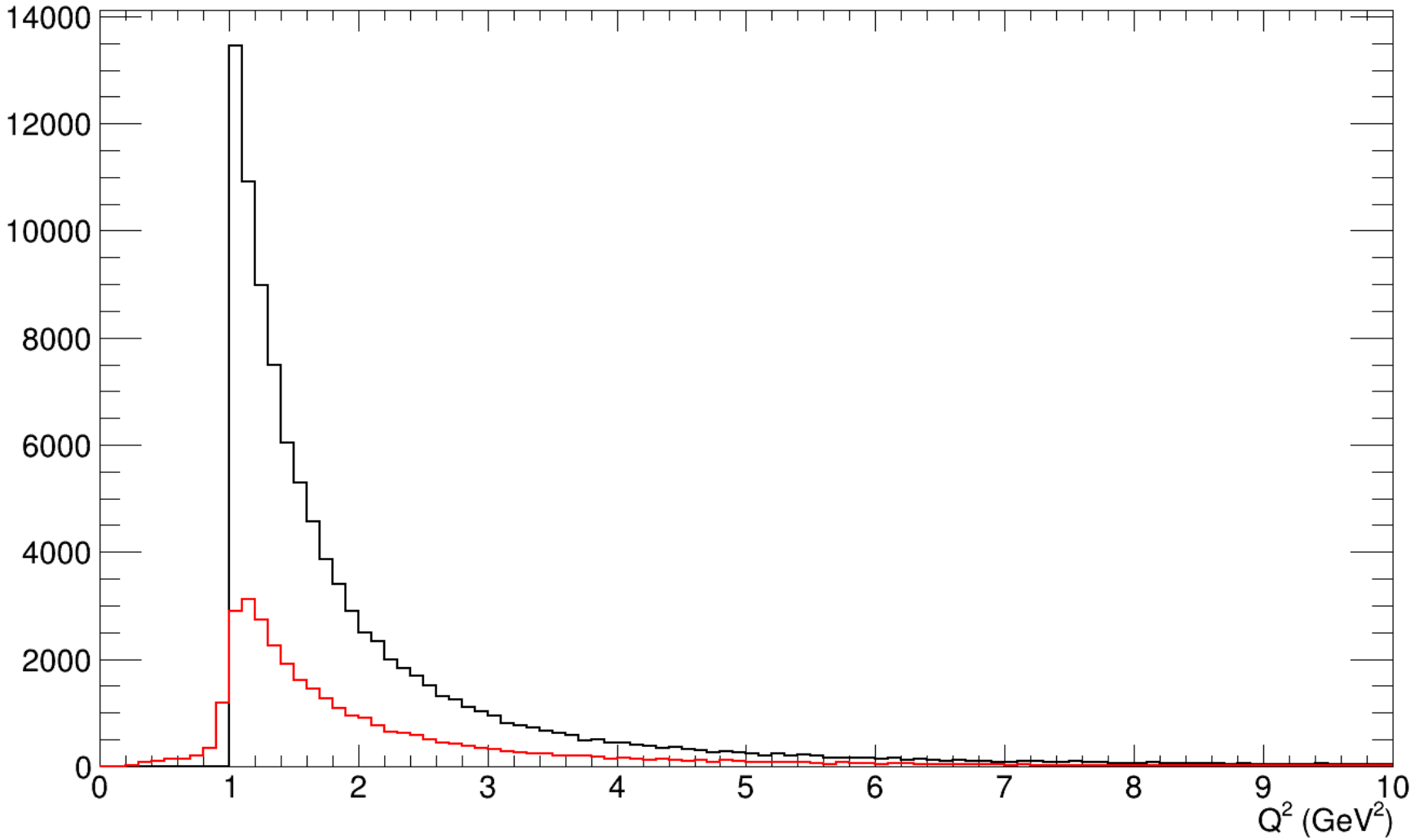
Black: Generated Blue: Reconstructed

$x_B = Q^2/(2pq)$



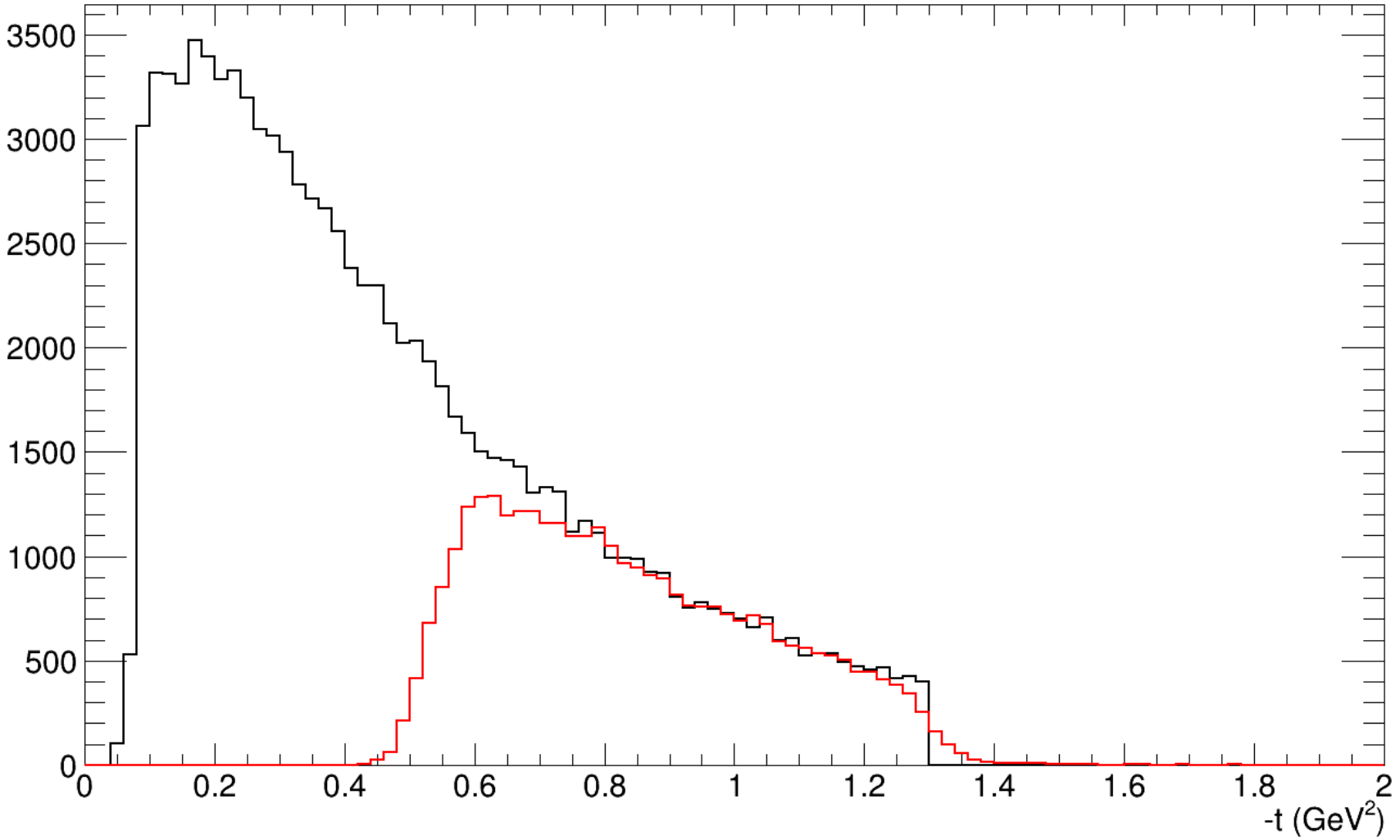
Black: Generated Blue: Reconstructed

Q^2



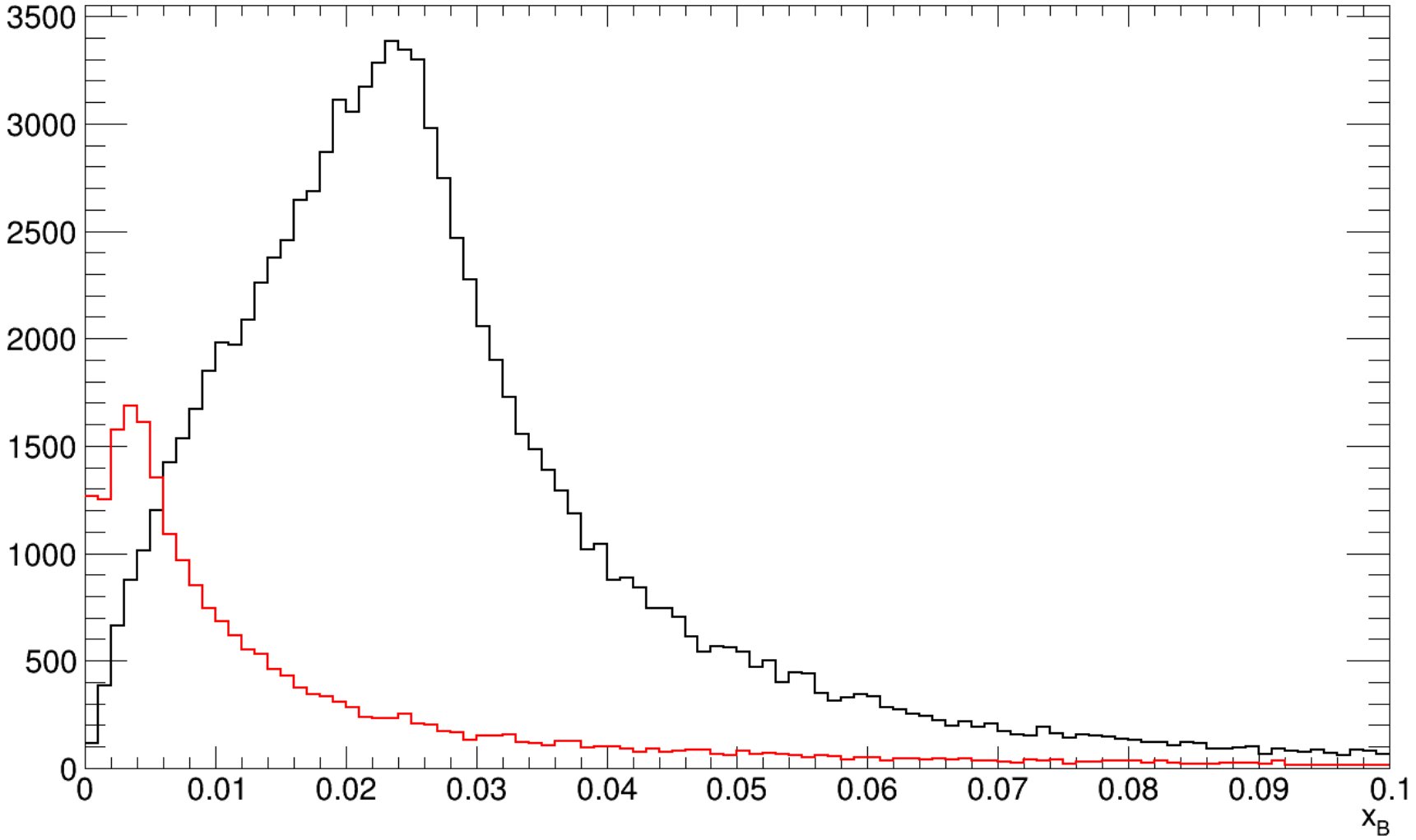
Black: Generated Red: Both e and p reconstructed

-t



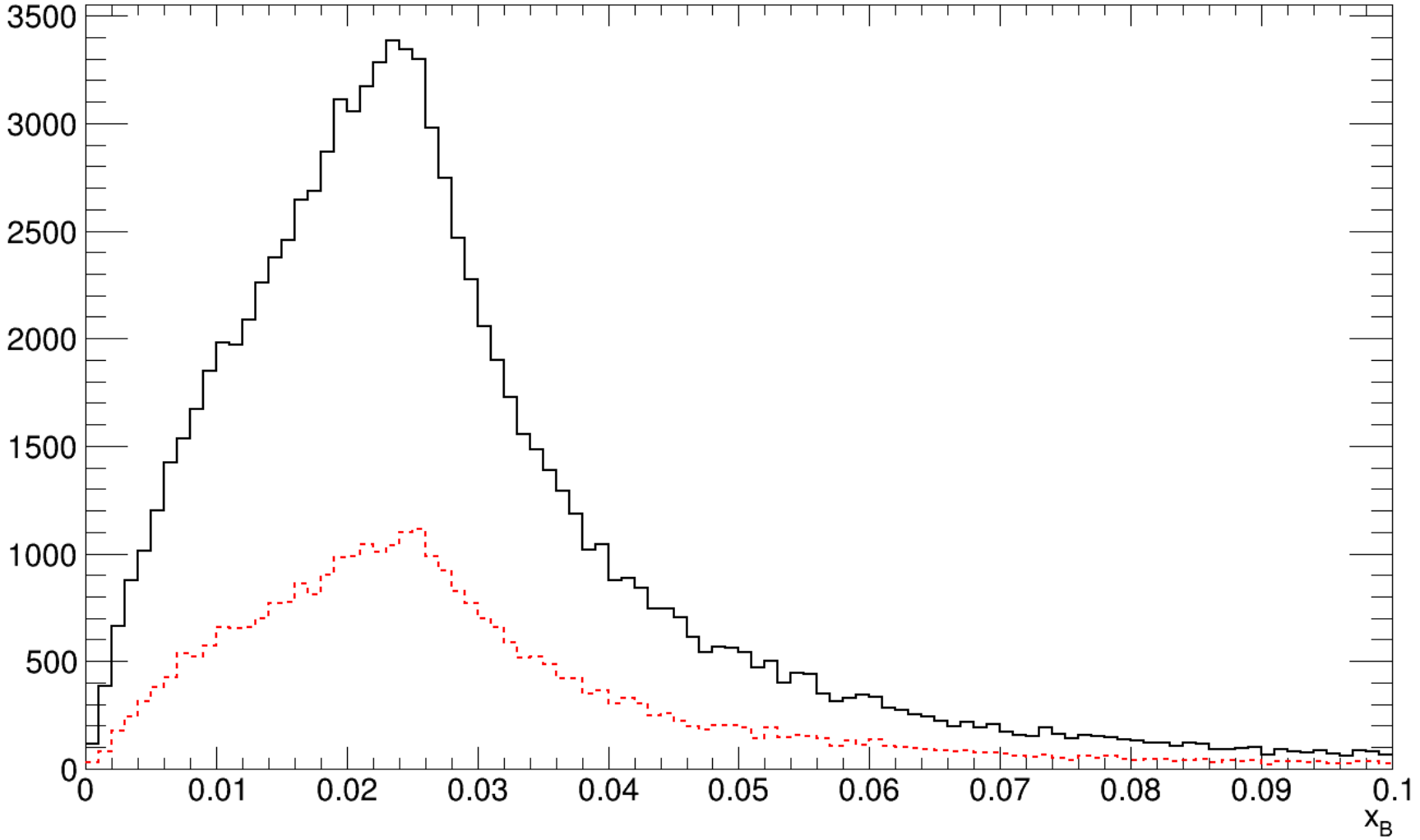
Black: Generated Red: Both e and p reconstructed

x_B



Black: Generated Red: Both e and p reconstructed

Associated x_B



Black: Generated Red dashed: Both e and p associated

Next

Look at the pion and decay photons.

Other components (roman pots).