Radiative Corrections (update)

Salvatore Fazio

Work done with Kemal Tezgin

R.C.s – kinematic cuts

- Pure DVCS with 10 GeV electron and 100 GeV proton
- Kinematic cuts:

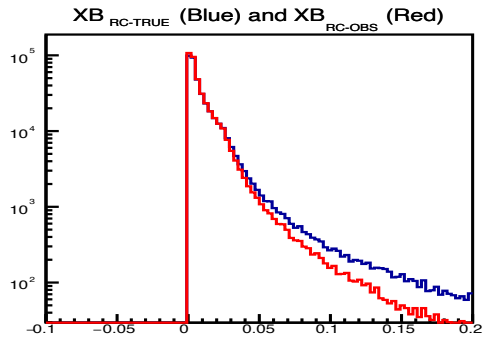
$0.0001 < xB < 0.63$

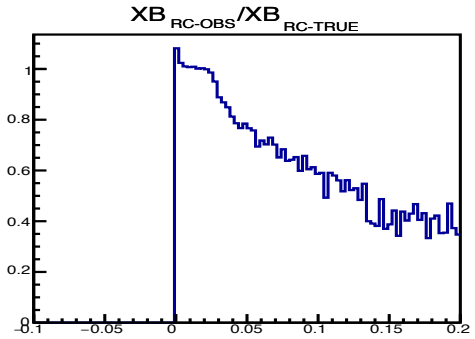
$1\ GeV^2 < Q^2 < 100\ GeV^2$

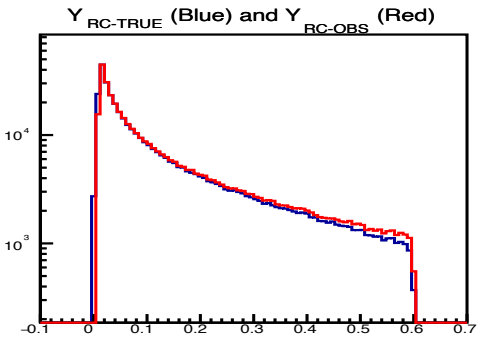
$0.04 < |t| < 1.3\ GeV^2$

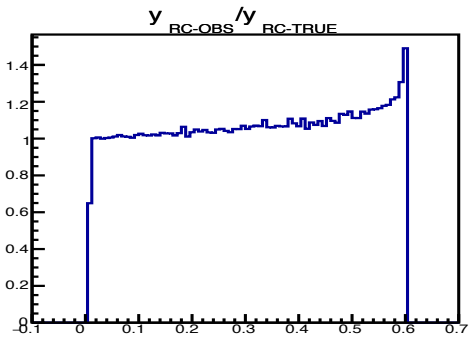
$0.01 < y < 0.6$

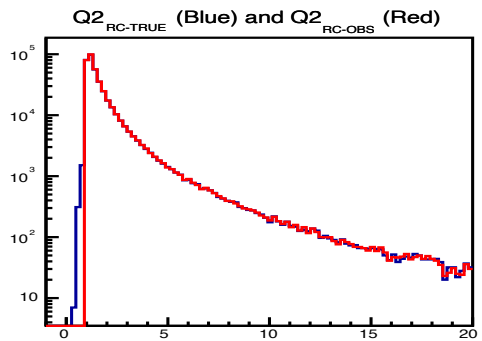
No cut on $\sum \mathrm{E} - Pz$ & $\epsilon = 10^{-6}$

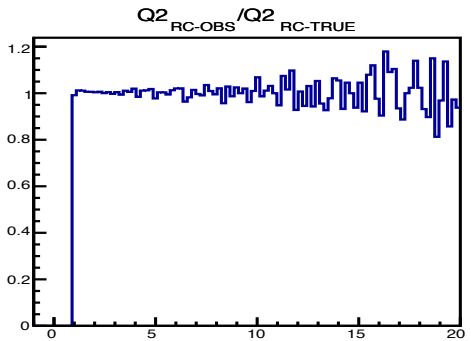


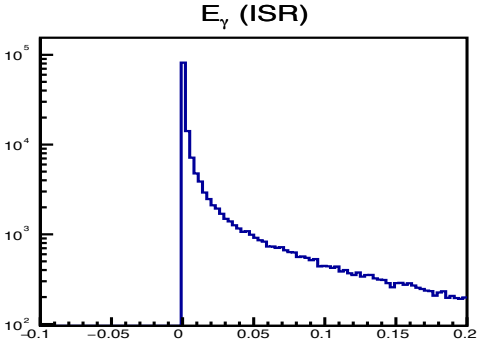


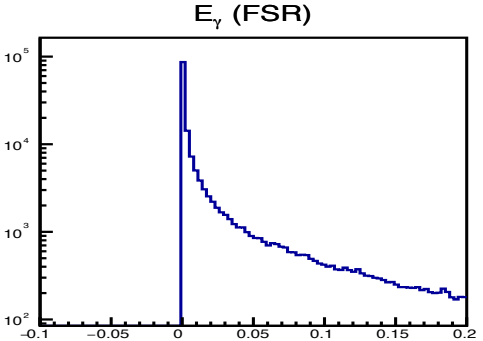


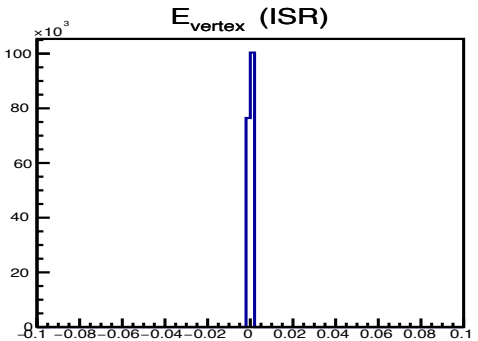


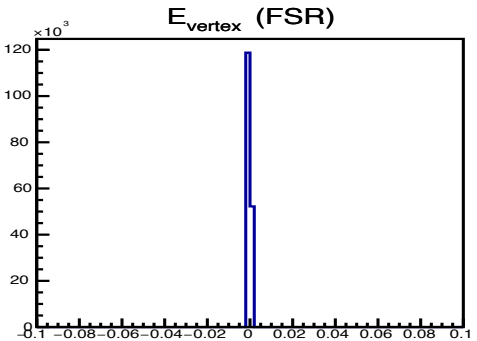


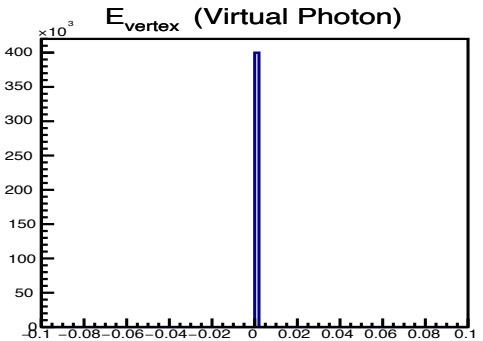




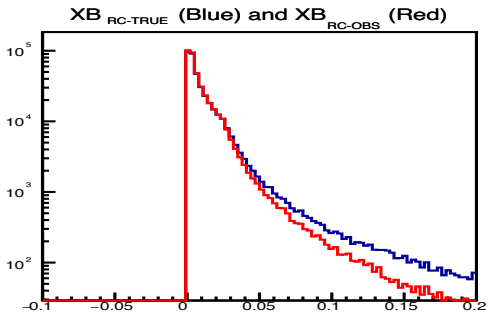


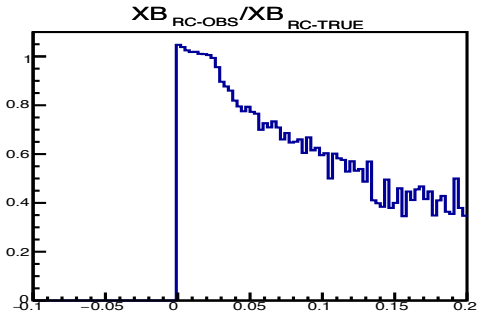


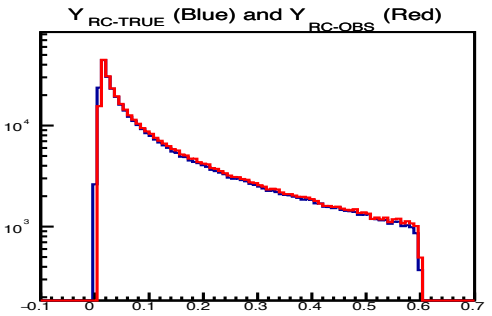


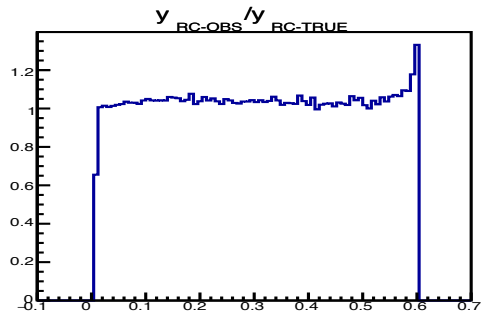


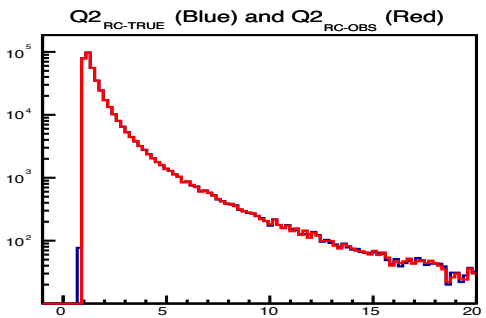
$\sum \mathrm{E} - Pz > 17$ GeV & $\epsilon = 10^{-6}$

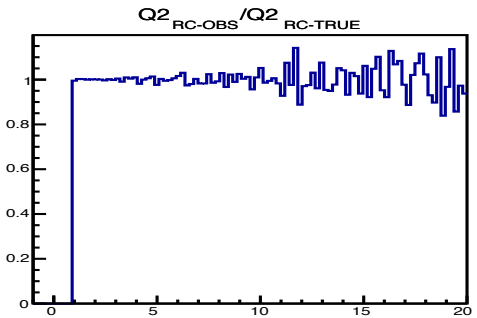


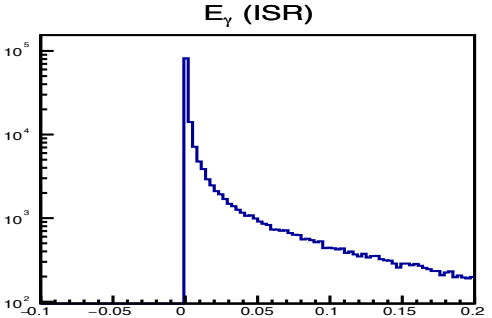


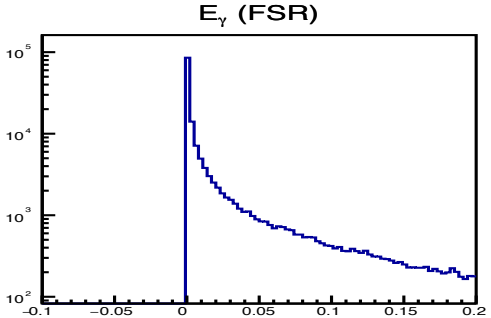


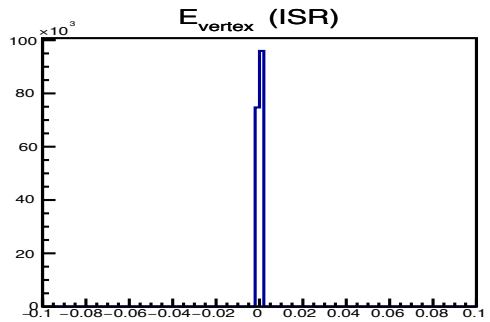


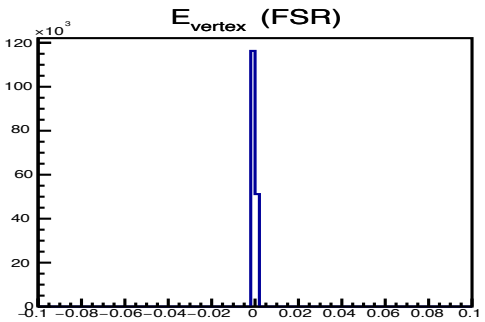


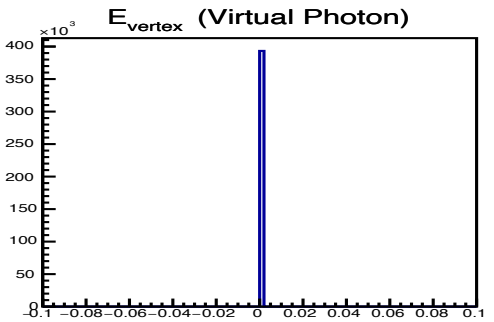




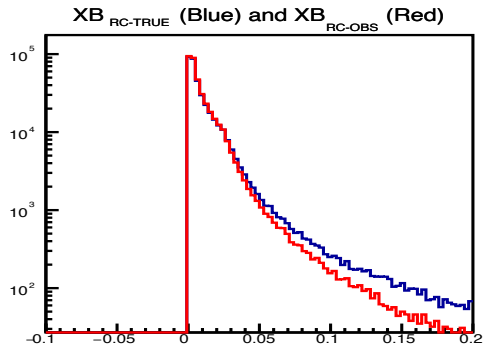


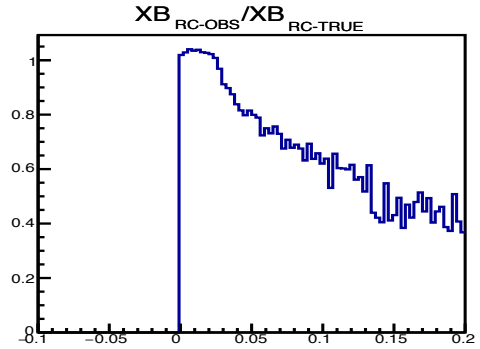


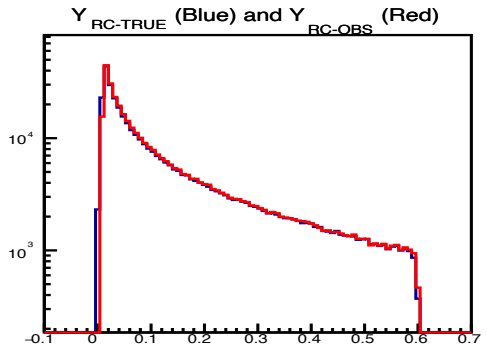


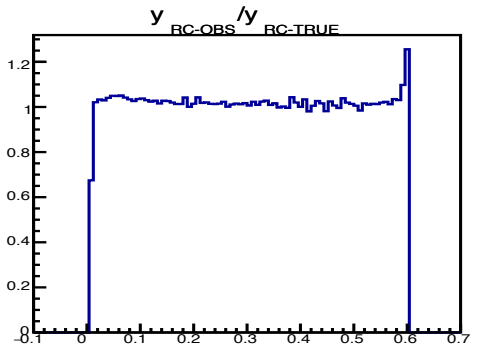


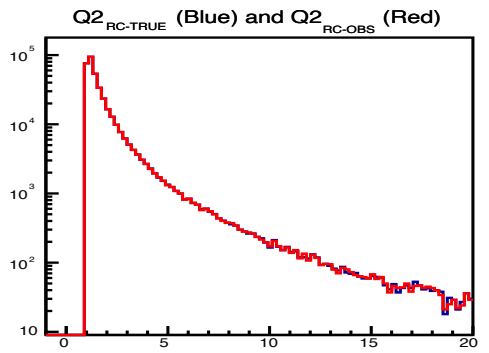
$\sum \mathrm{E} - Pz > 19$ GeV & $\epsilon = 10^{-6}$

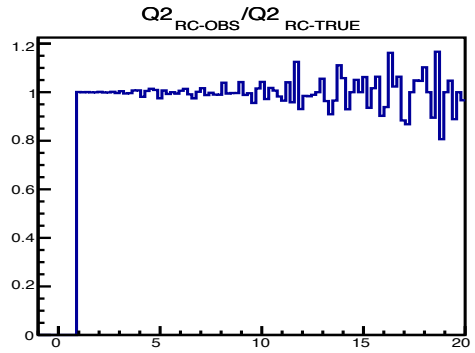


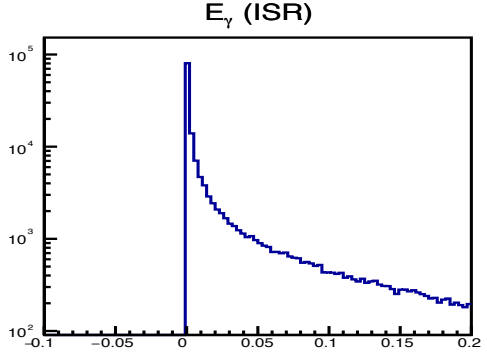


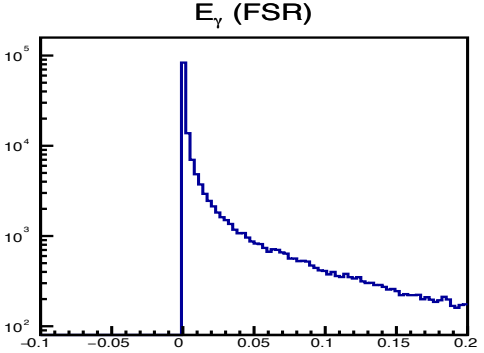


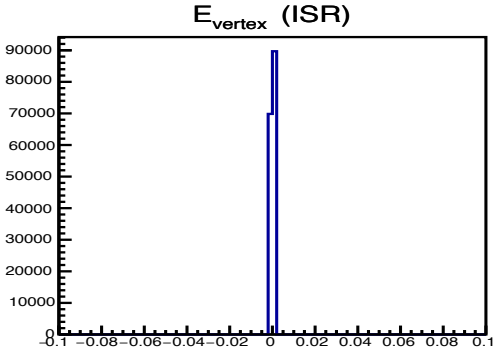


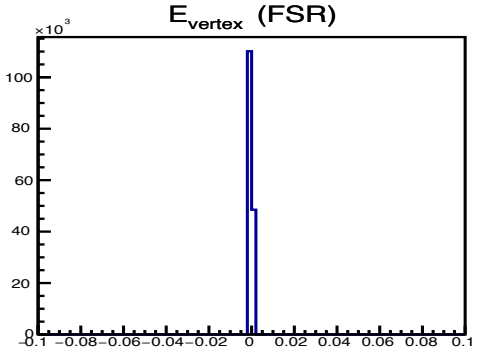


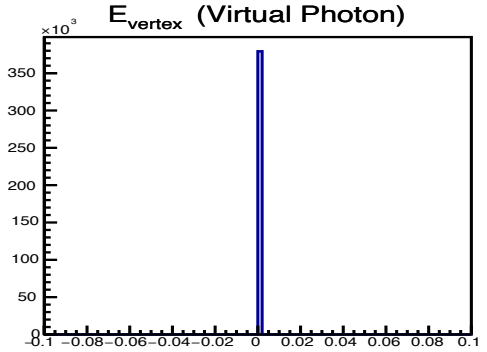




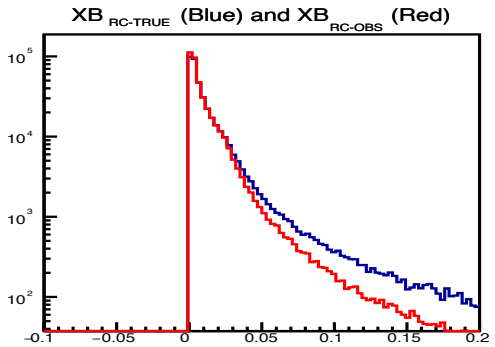


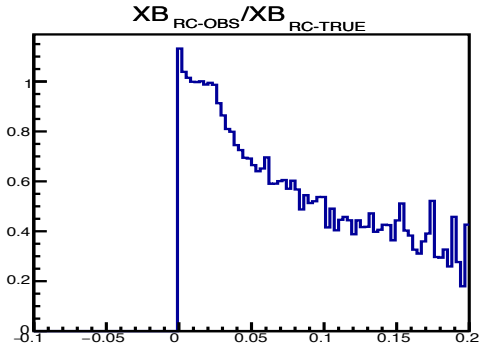


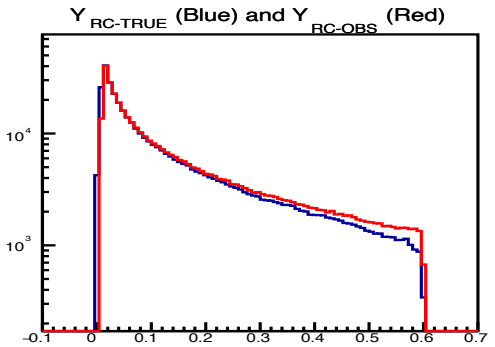


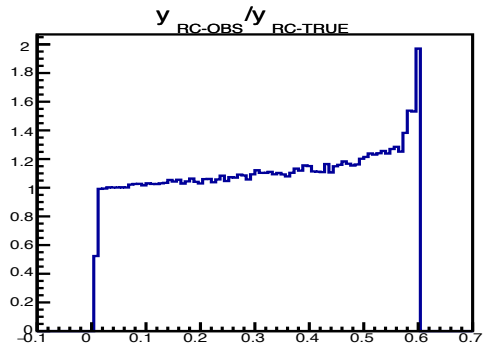


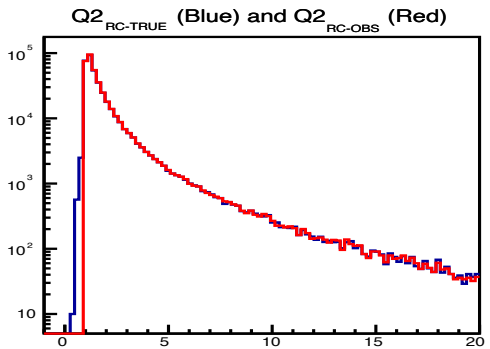
No cut on $\sum \mathrm{E} - Pz$ & $\epsilon = 10^{-8}$

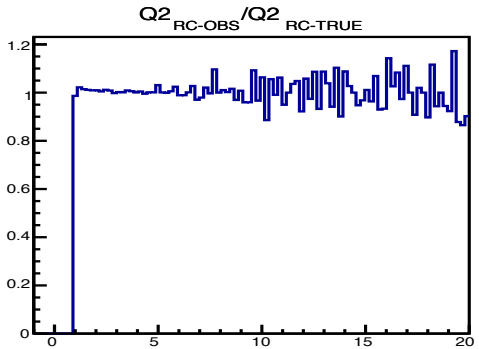


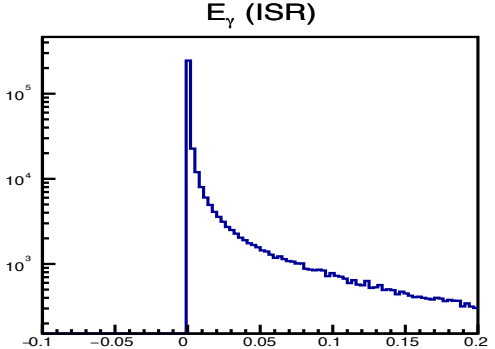


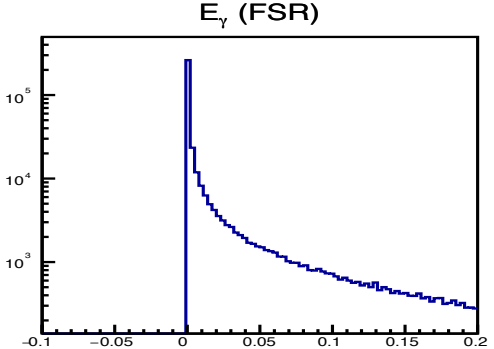


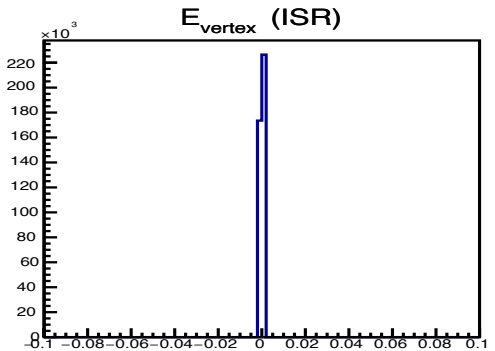


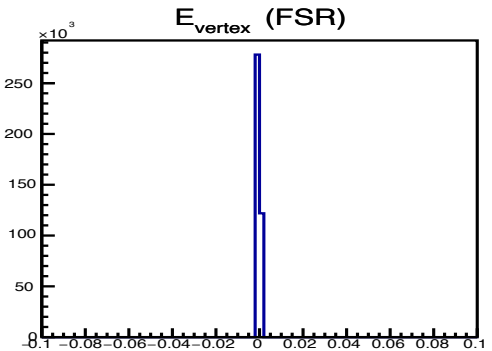


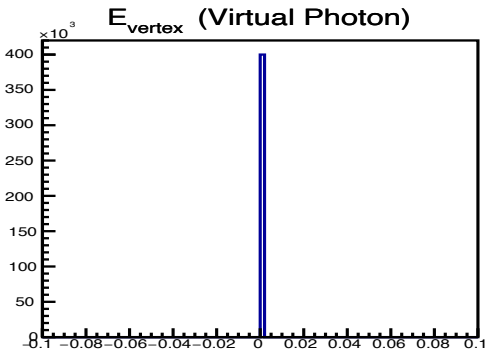




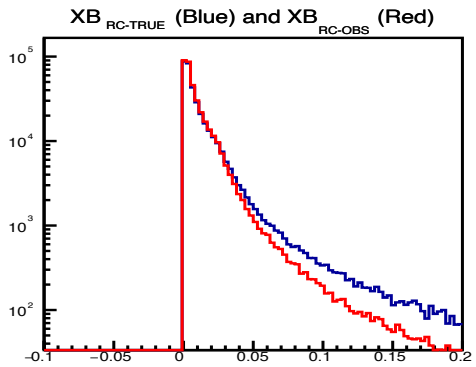


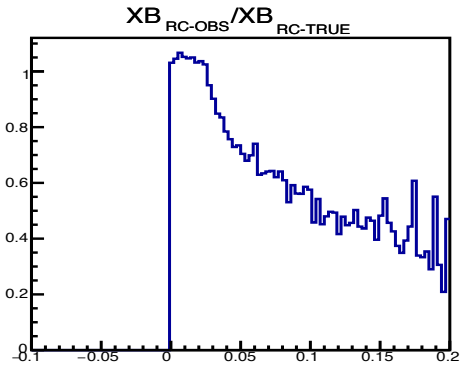


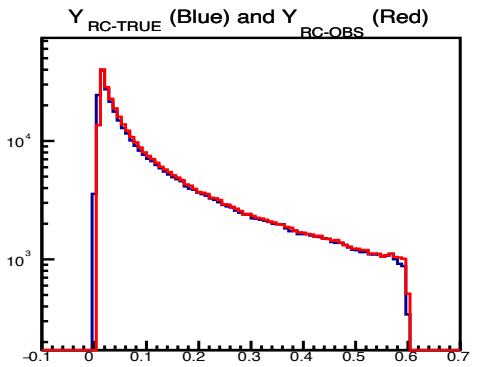


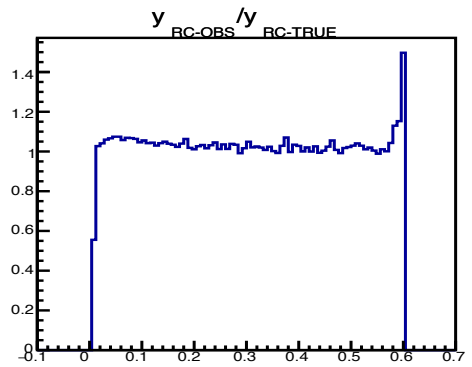


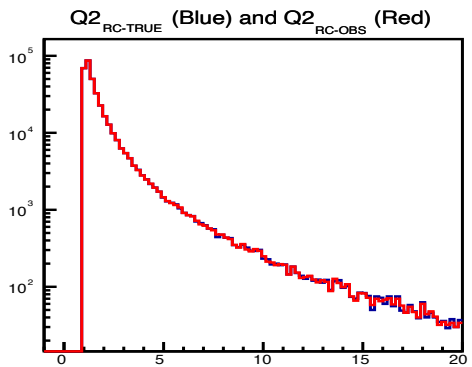
$\sum \mathrm{E} - Pz > 19\ \mathrm{GeV}\ \&\ \epsilon = 10^{-8}$

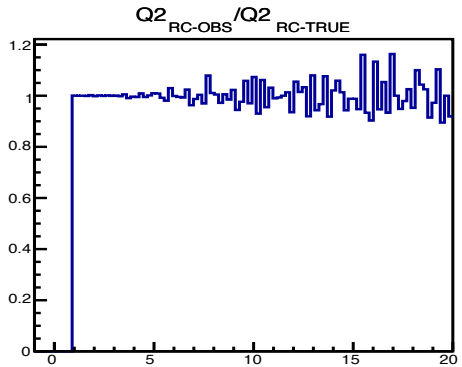


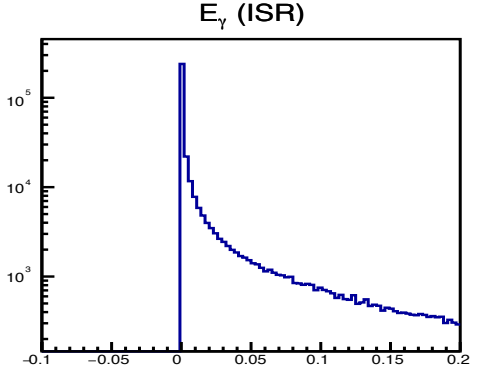


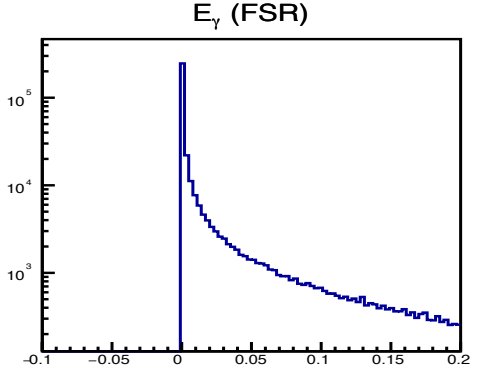


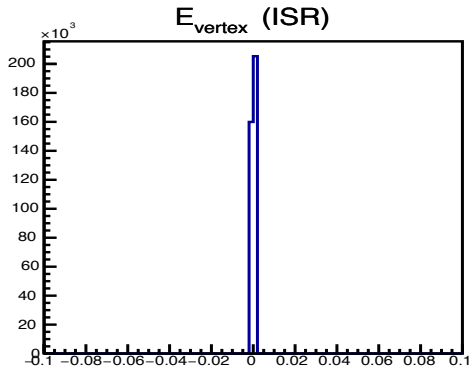


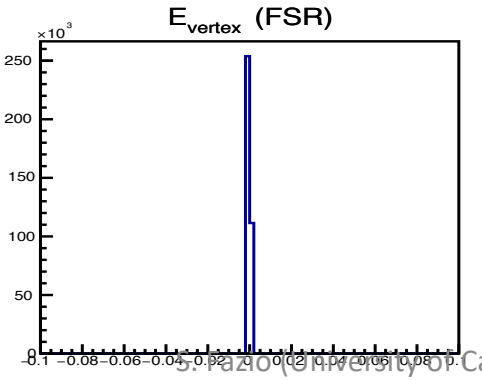


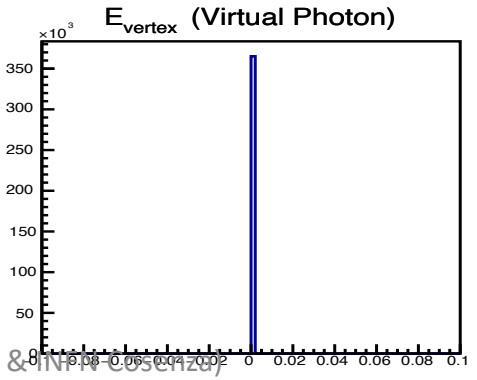




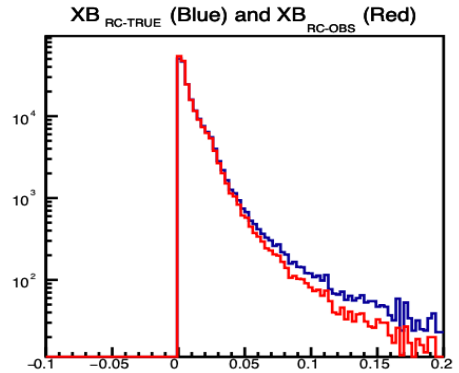


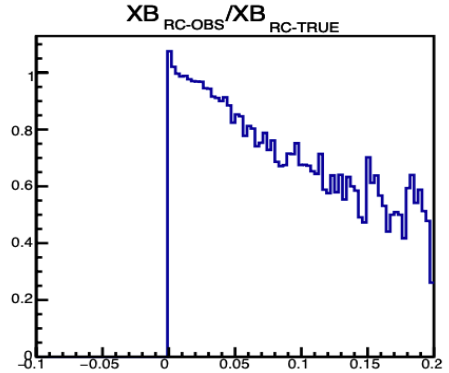


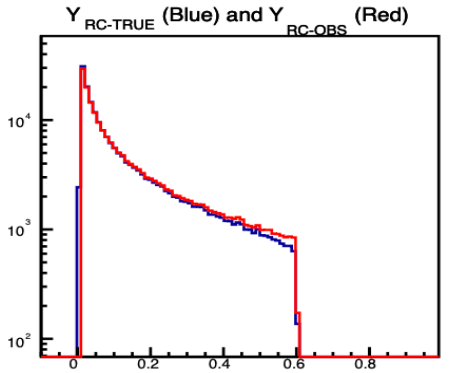


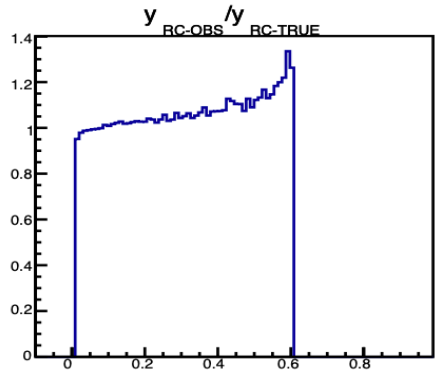


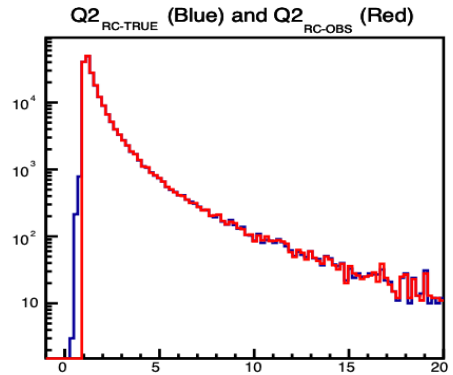
No cut on $\sum \mathrm{E} - Pz$ & $\epsilon = 10^{-2}$

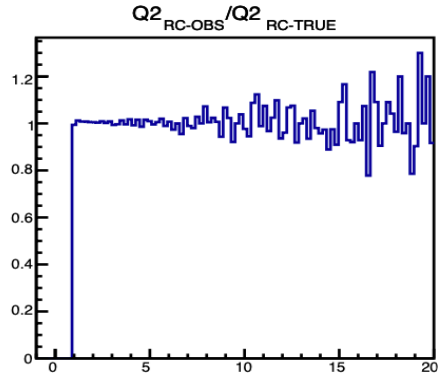


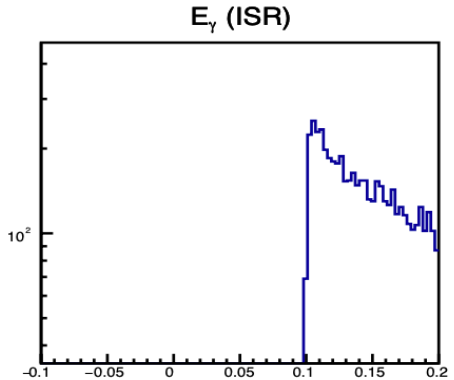


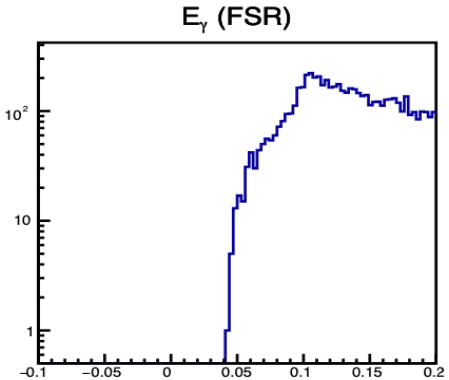


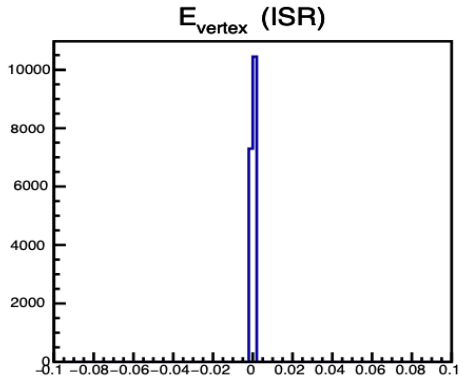


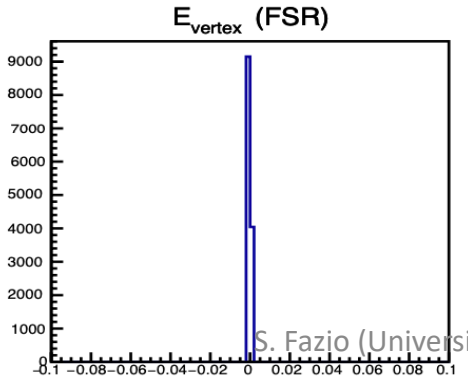


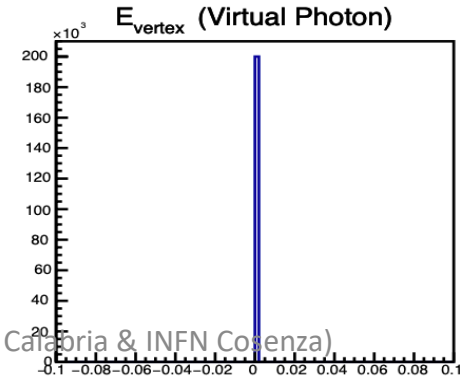








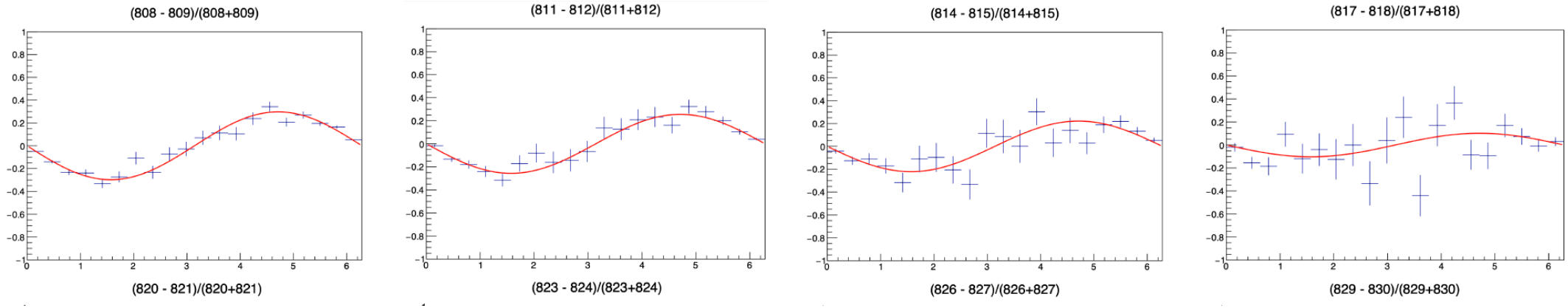




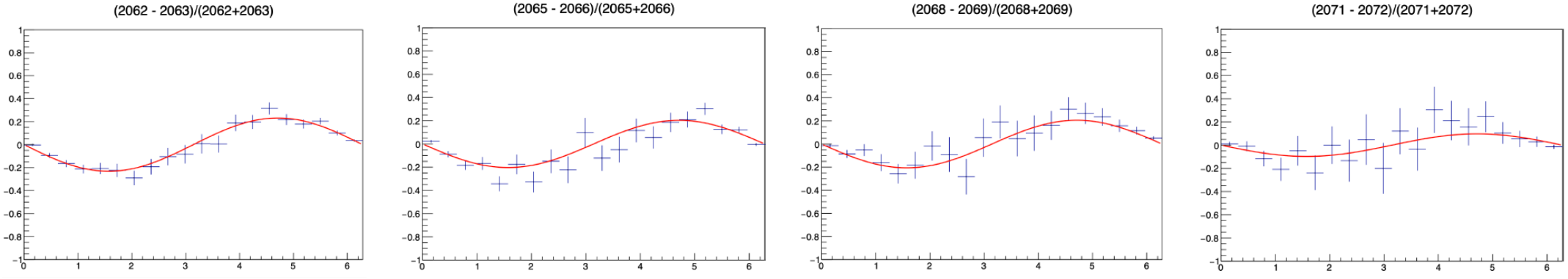
Transverse spin asymmetry – A_{UT}

DVCS +BH +INT

Bin: $0.000251189 \leq xB < 0.000398107, \quad 1 \leq Q2 < 1.77828$



Bin: $0.001 \leq xB < 0.00158489, \quad 3.16228 \leq Q2 < 5.62341$



The present: impact studies!

- Radiative effects seem not to be very large at EIC kinematics → E-p_z cut
- We aim at performing new impact studies for extracting GPDs, similarly to what was done in JHEP09(2013)093, now with:
  - geant-4 simulation of the ePIC detector response and realistic event reconstruction
  - state-of-art radiative effects implemented in EpIC
  - BH and π^0 background subtraction
  - state of art models: GK and KM20
- EpIC:
  - fully replaces MILOU & MILUO 3D. Maintained, using state or art models
  - Anyone encouraged to use it: arXiv:2205.01762