

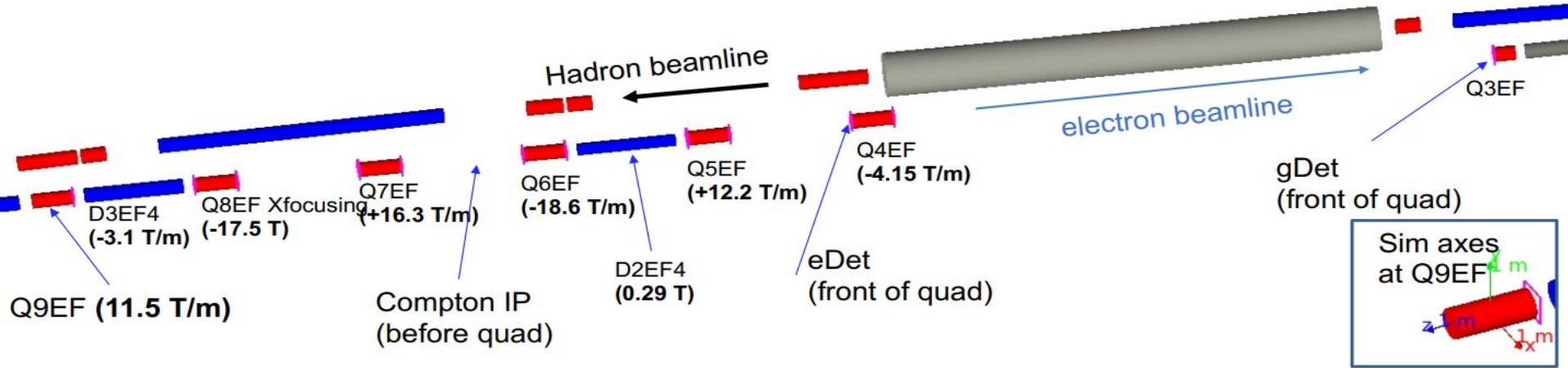
Compton Polarimetry at IP6



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- Replicated Dr. Ciprian Gal's work on Transverse Beam smearing at ComptonIP B for 18 GeV.
- Same study was repeated for 10 GeV and 6 GeV.



IP Location : middle of quad Q9EF

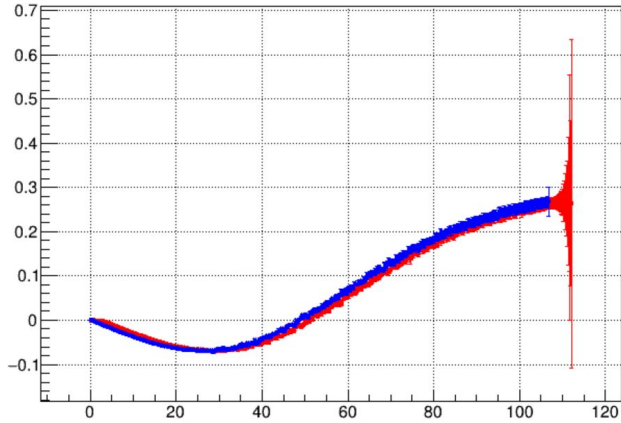
- Q8EF is Focusing in X. It worked against the spread that dipole D3EF4 produces.
- This gives a squeezed distribution for scattered electron signal.

IP Location : before quad Q6EF

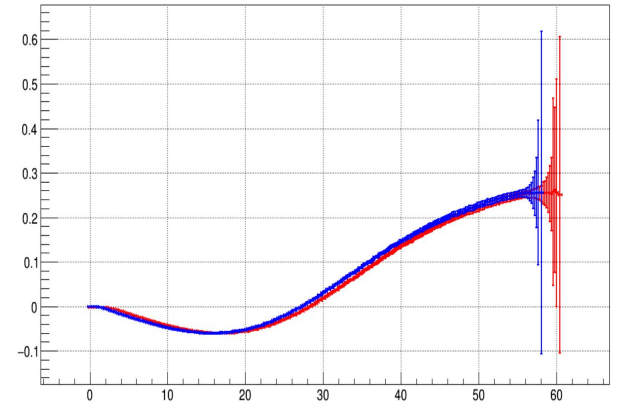
- Q5EF is horizontally defocusing.
- D2EF4 is not as strong as D3EF4.
- This gives a broaden spread in distribution for scattered electron signal which is similar to compton spectrum.

Plots :The positional distribution at the electron detector and the asymmetry:

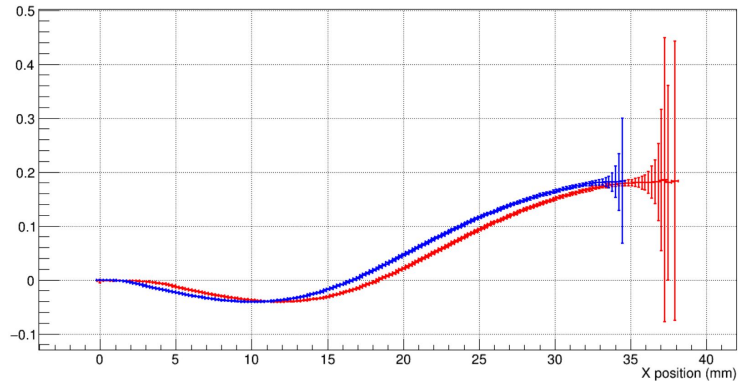
18 GeV



10 GeV



6 GeV

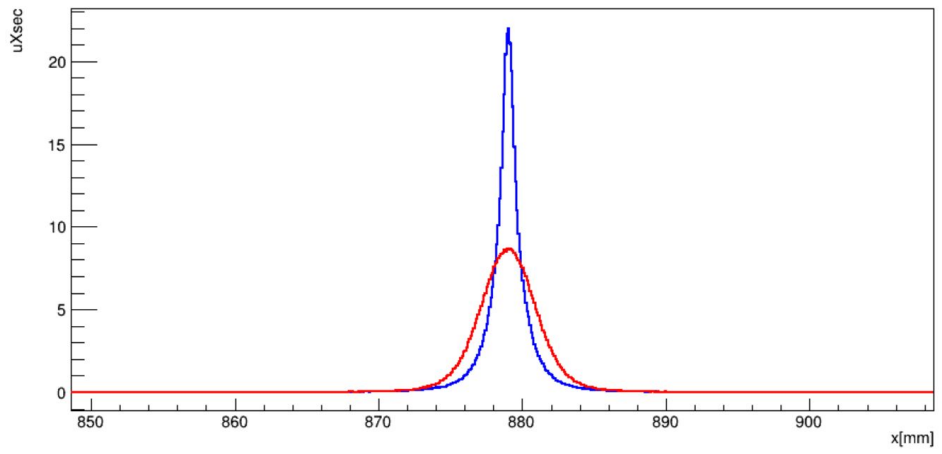


● No Smearing

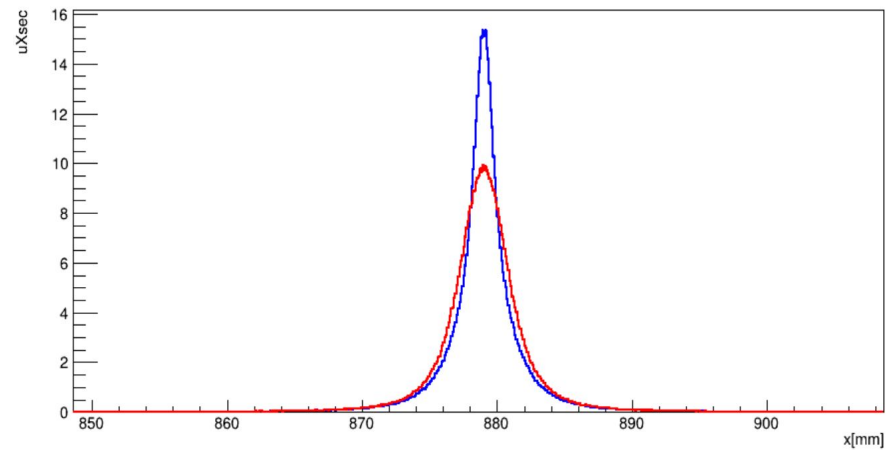
● Smearing

Plots: The positional distribution at the photon detector

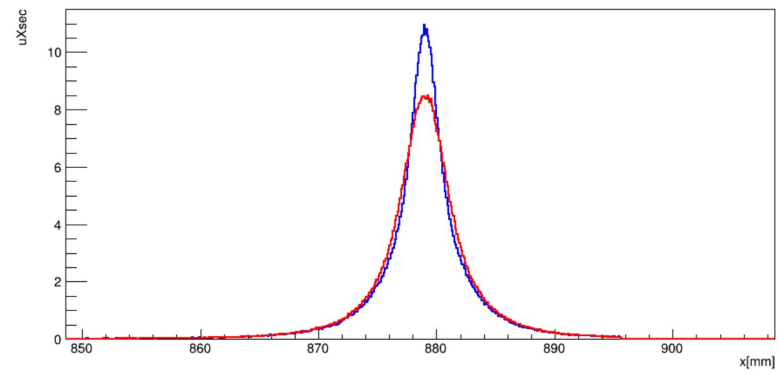
18GeV_uXsec q03US :998923



10GeV_uXsec q03US :997085

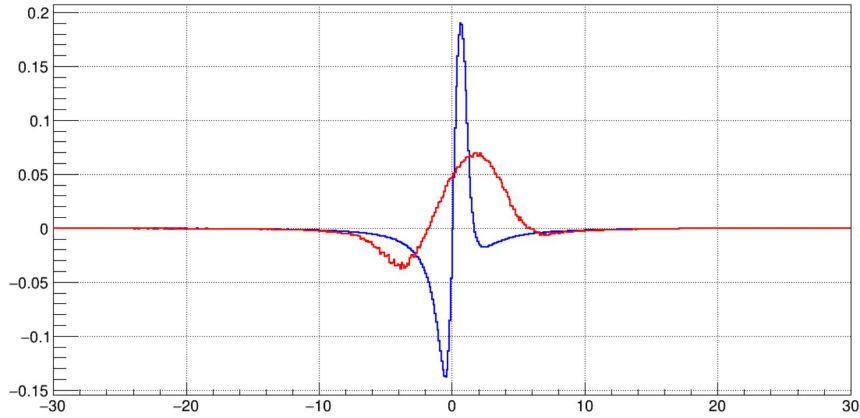


6GeV_uXsec q03US :992878

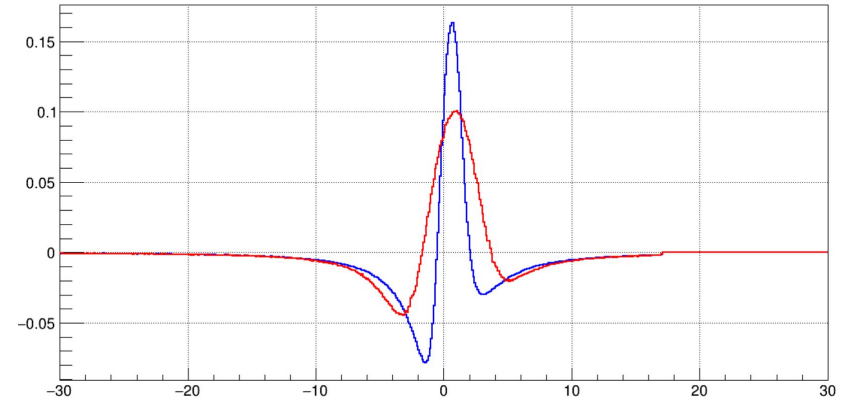


Plots: Transverse asymmetry

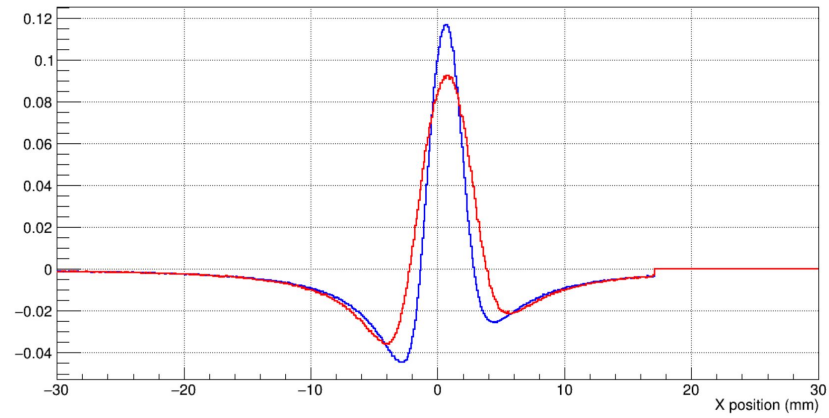
18 GeV



10 GeV

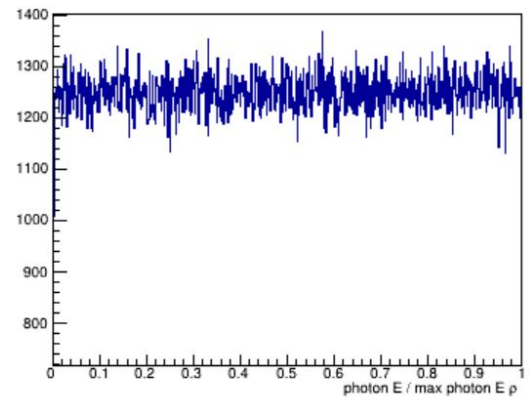


6 GeV

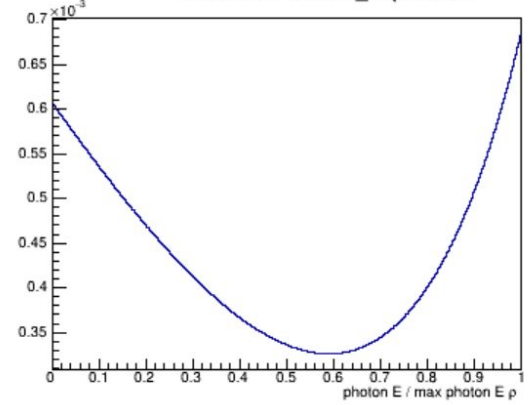


Plots: Longitudinal asymmetry

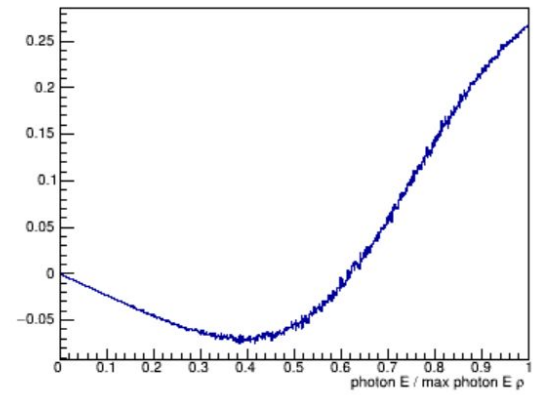
beam E = 18GeV_counts



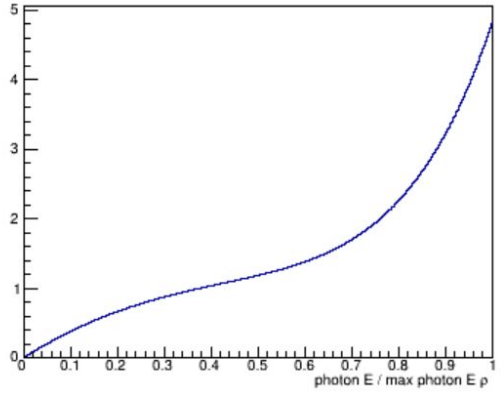
beam E = 18GeV_unpolXsec



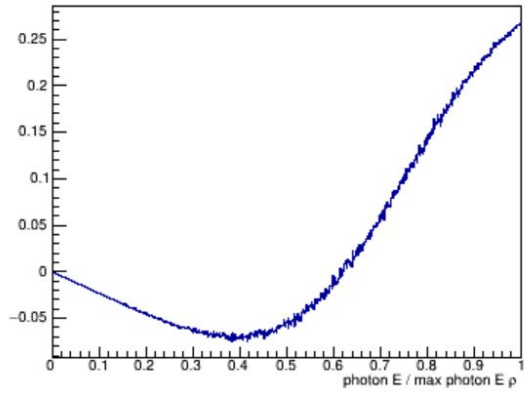
beam E = 18GeV_polXsec



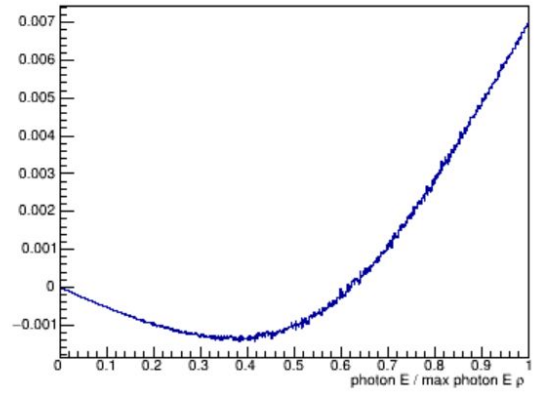
beam E = 18 GeV_kE*unpolXsec



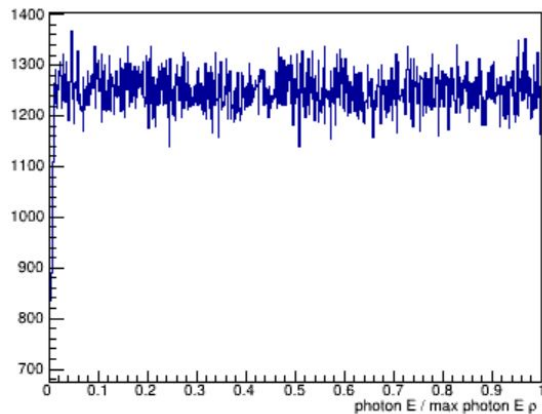
beam E = 18GeV_kE*polXsec



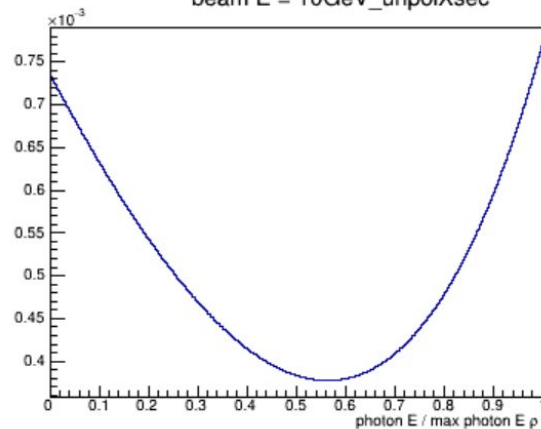
beam E = 18GeV_polXsec*sqrt(unpolXsec)



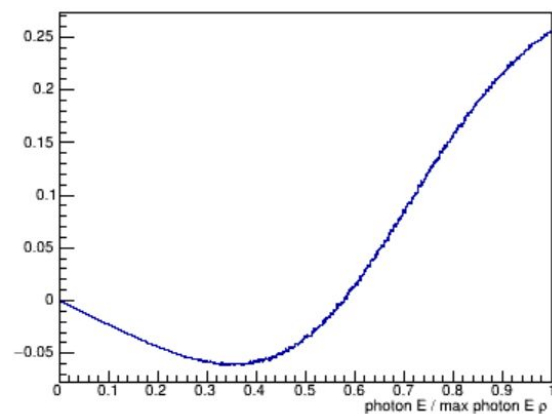
beam E = 10GeV_counts



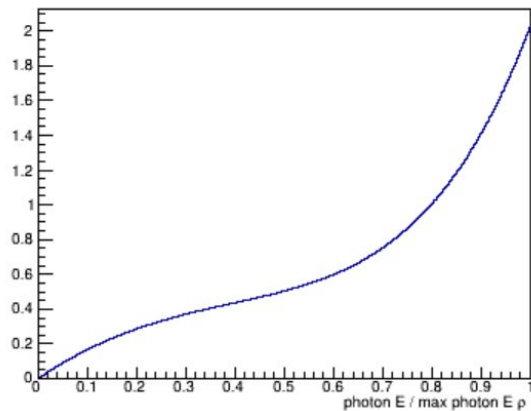
beam E = 10GeV_unpolXsec



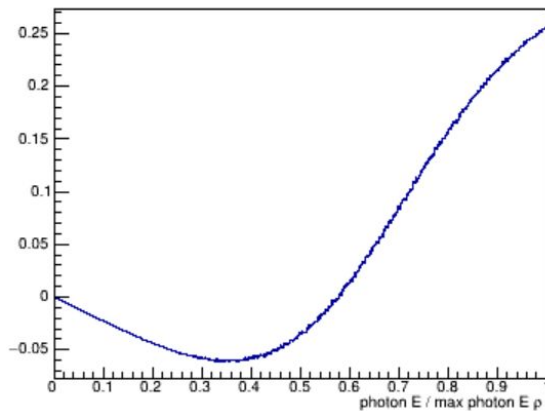
beam E = 10GeV_polXsec



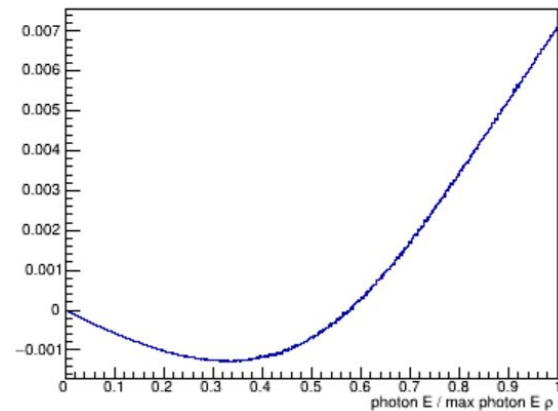
beam E = 10GeV_ke*unpolXsec



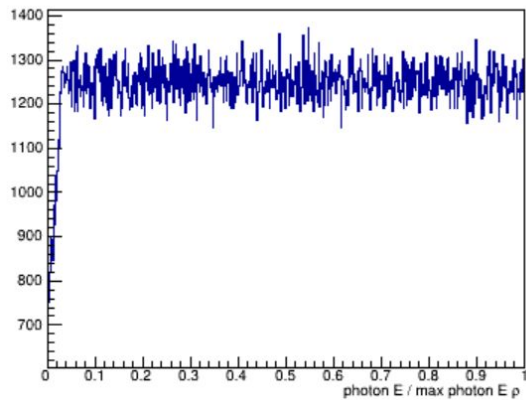
beam E = 10GeV_ke*polXsec



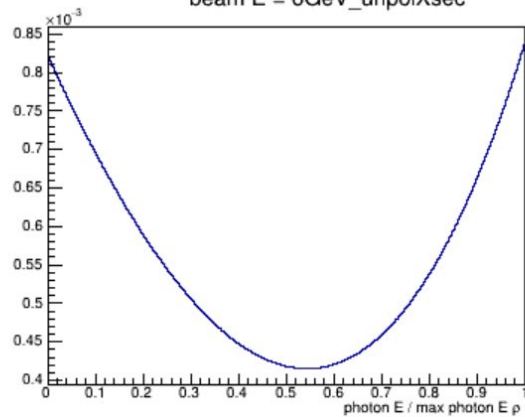
beam E = 10GeV_polXsec*sqrt(unpolXsec)



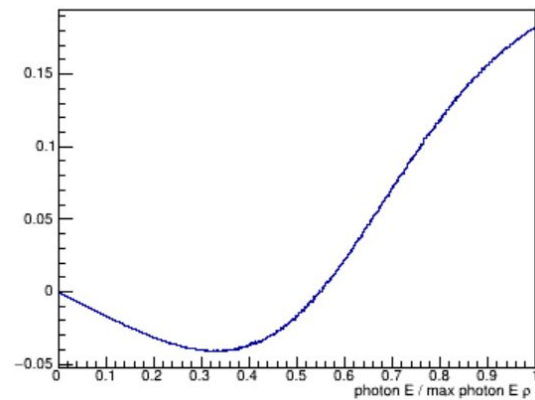
beam E = 6GeV_counts



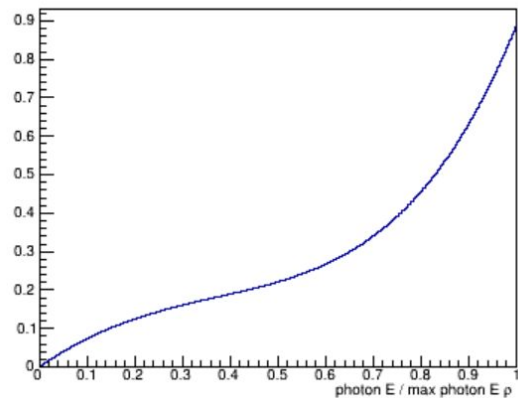
beam E = 6GeV_unpolXsec



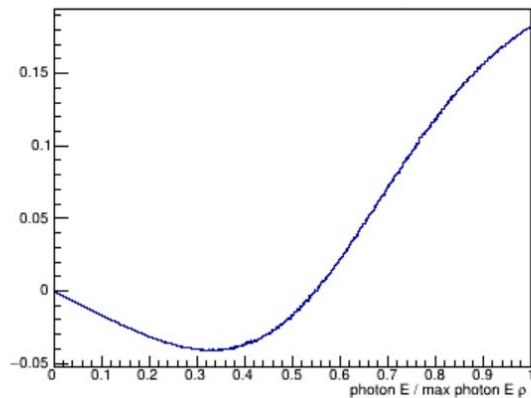
beam E = 6GeV_polXsec



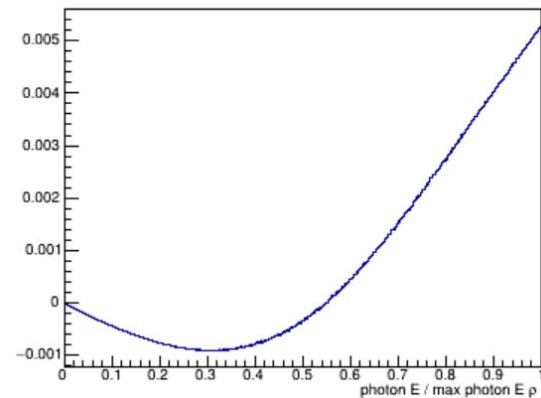
beam E = 6GeV_kE*unpolXsec



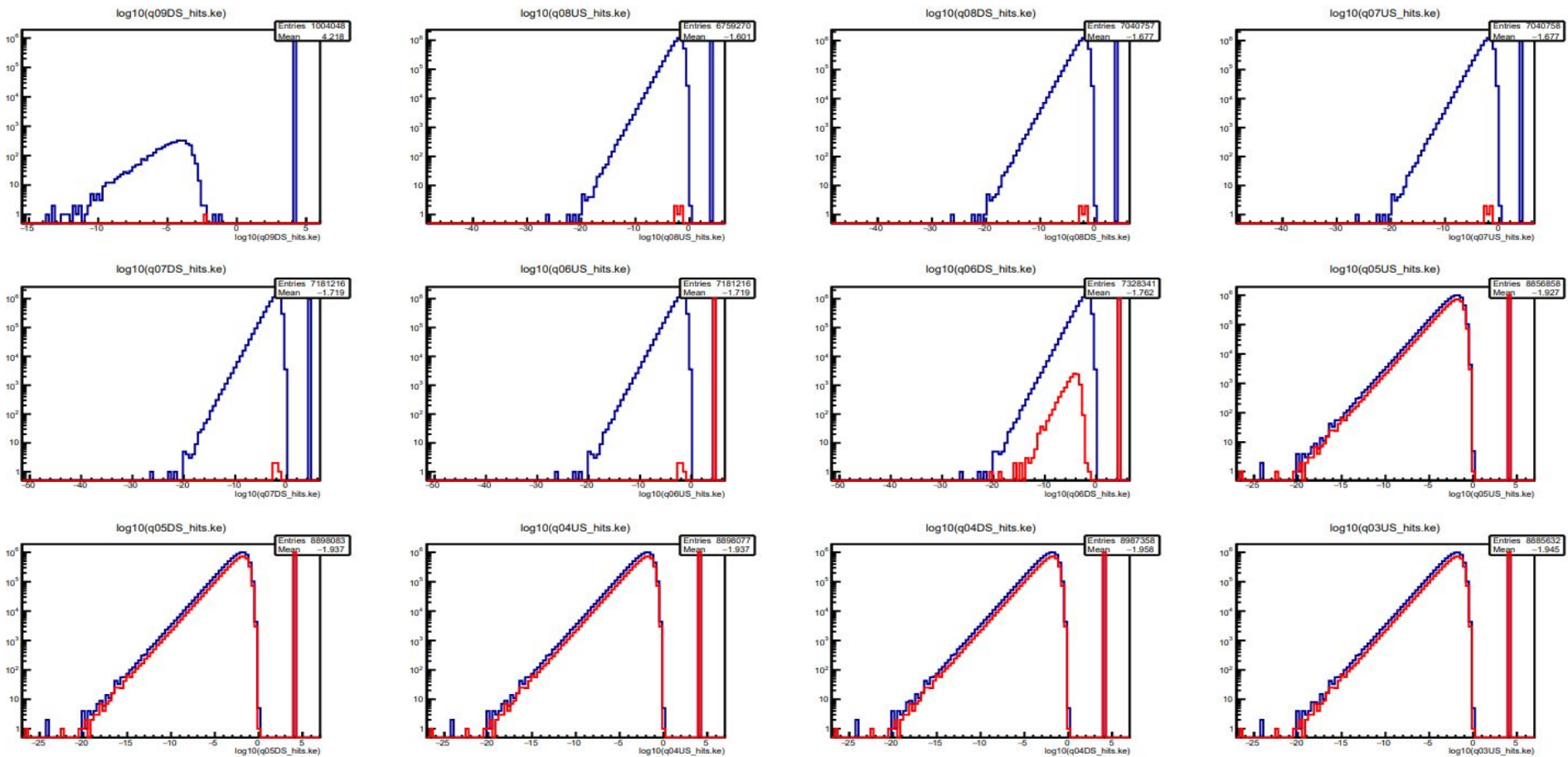
beam E = 6GeV_kE*polXsec



beam E = 6GeV_polXsec*sqrt(unpolXsec)



Synchrotron Radiation (preliminary approach)



Beam Parameters used:

Energy	18 GeV	10 GeV	*6 GeV
beta_x	10.1229	17.8739	16.805
beta_y	4.9255	1.3152	3.571
alpha_x	-2.1912	-4.3747	-3.055
alpha_y	1.5356	0.3008	7.142
For high divergence configuration:			
Emit_x	24 nm	20 nm	18nm
Emit_y	2.0 nm	1.3nm	0.7nm

*Beam Parameters for 6 GeV are not available yet.

Short Term Goal

- The beam SR should be evaluated starting further US to check whether the edet will be affected
 - The photon detector should be able to suppress most of the synchrotron radiation using a pre-radiator.