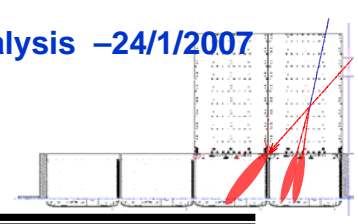


Update on PSF studies



Analysis steps



☐ Data

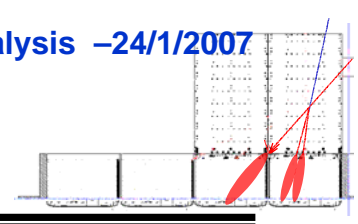
- Tagged photons at 0 degree on tower3 (still)

☐ Standard cuts

- Tagger recon – 8 hits
 - TAG_THETA_IN > -100 && TAG_EGAMMA > 0
- CU recon
 - CalCslIRLn > 3 && CalEnergyCorr > 30 && (TkrNumTracks == 1 || TkrNumTracks == 2)
- Front layers && impact point cut
 - VtxX0 > 590 && vtxX0 < 670 && VtxY0 > 0 && VtxY0 < 100 && Tkr1FirstLayer >= 6



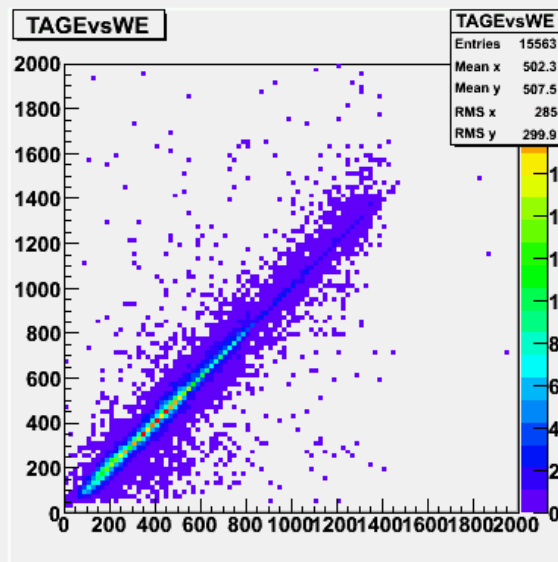
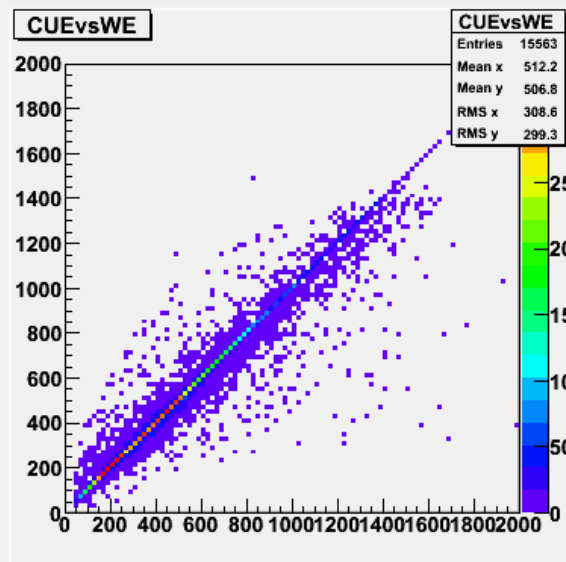
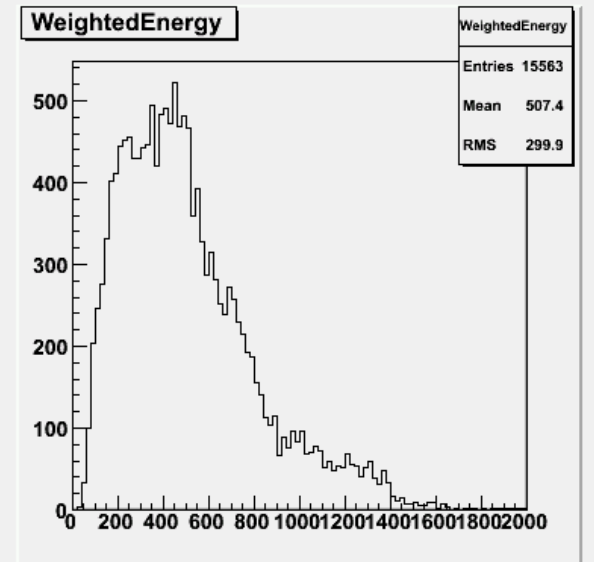
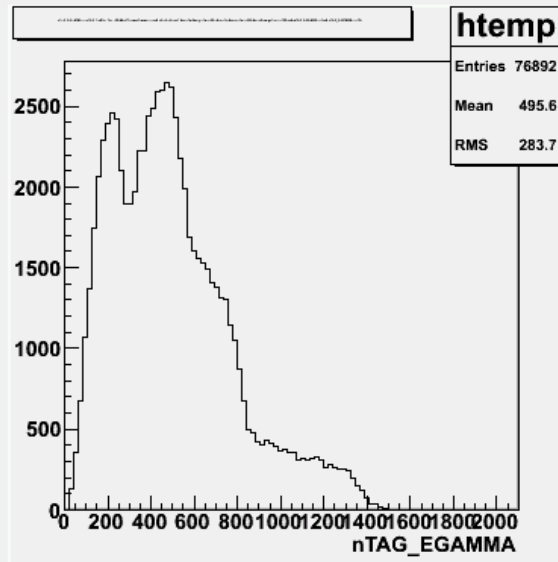
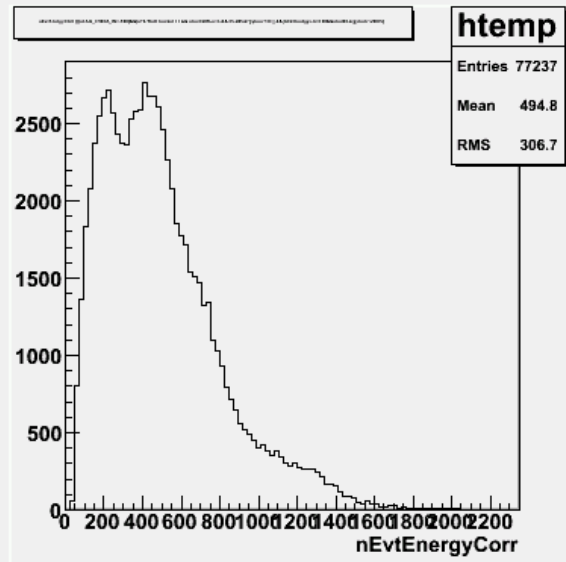
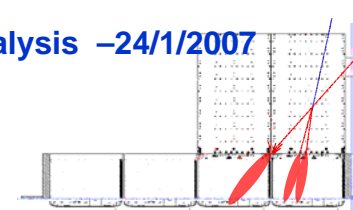
Analysis steps



- ☐ Variable for Energy binning study (4/decade)
 - TAG_EGAMMA
 - EvtEnergyCorr
 - WeightedEnergy of the above
- ☐ Error deviation calculation (see slides from jan 17)
 - Rotate tagger reference frame on run basis
 - Get direction error from scalar product of incoming beam direction and reconstructed beam
 - NEW: direction error fit following Toby parameterization (LAT-AM-04355)
- ☐ Comparison with MC
- ☐ add more angles



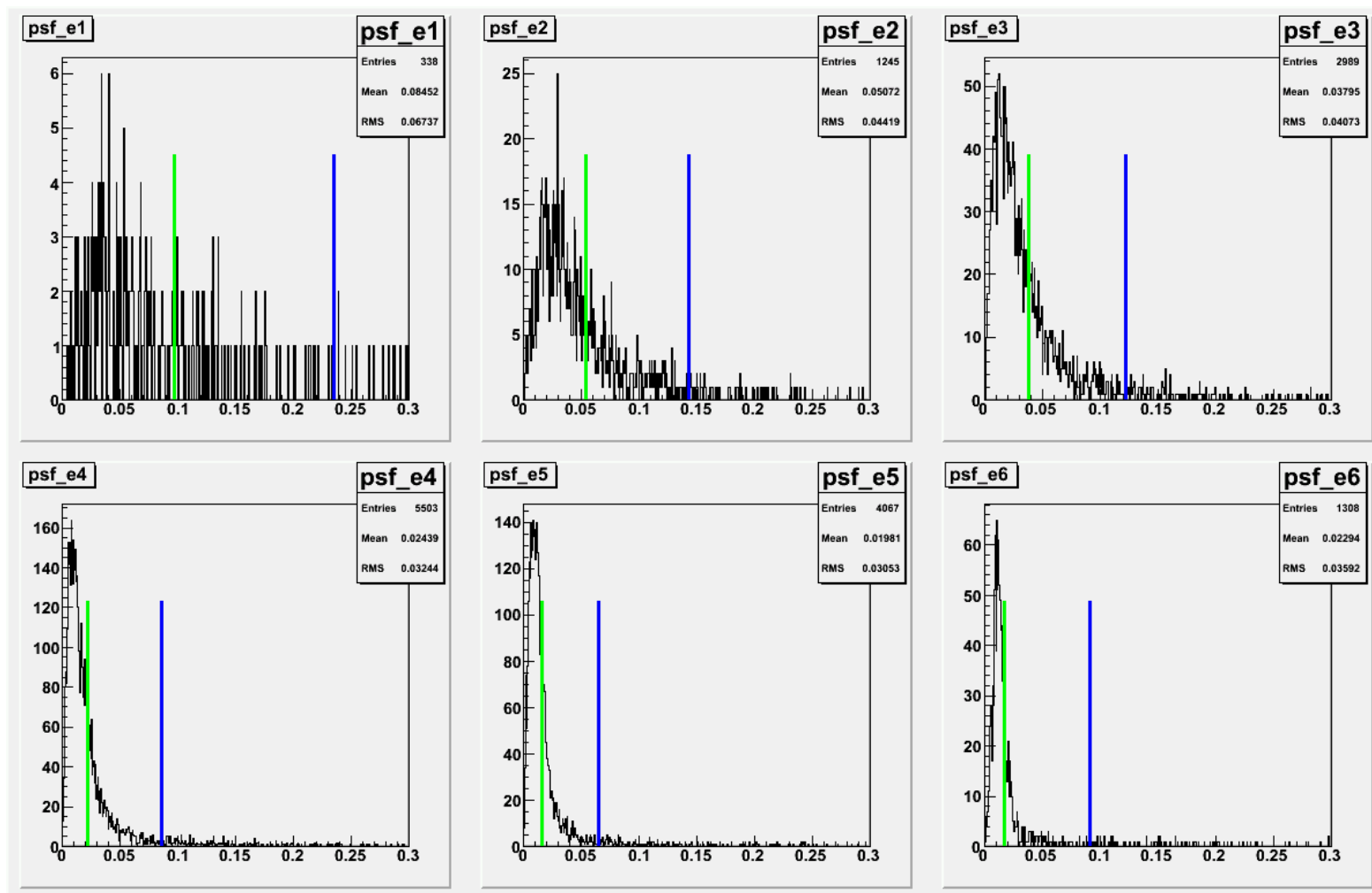
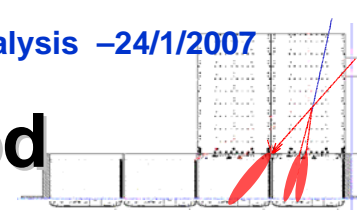
Energy choice for binning



- ❑ Tagger is worse than CU at low Energy
 - CU weighs more there
- ❑ Weighted spectrum has fewer events at low E

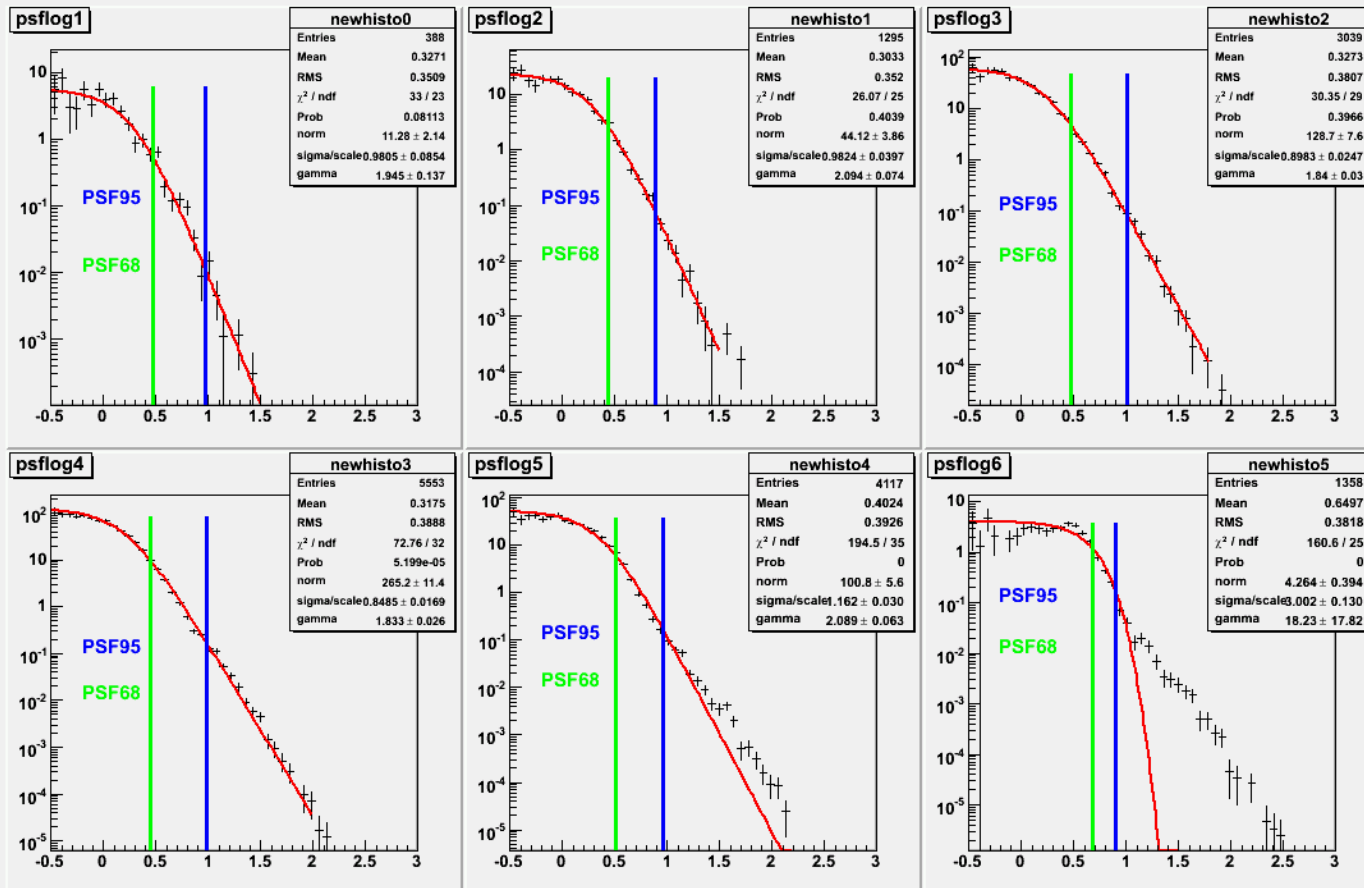
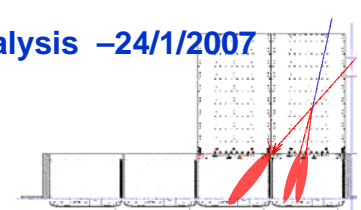


Direction Error – Counting Method





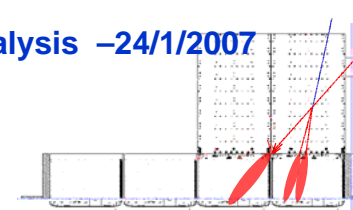
Direction Error – Fit Method



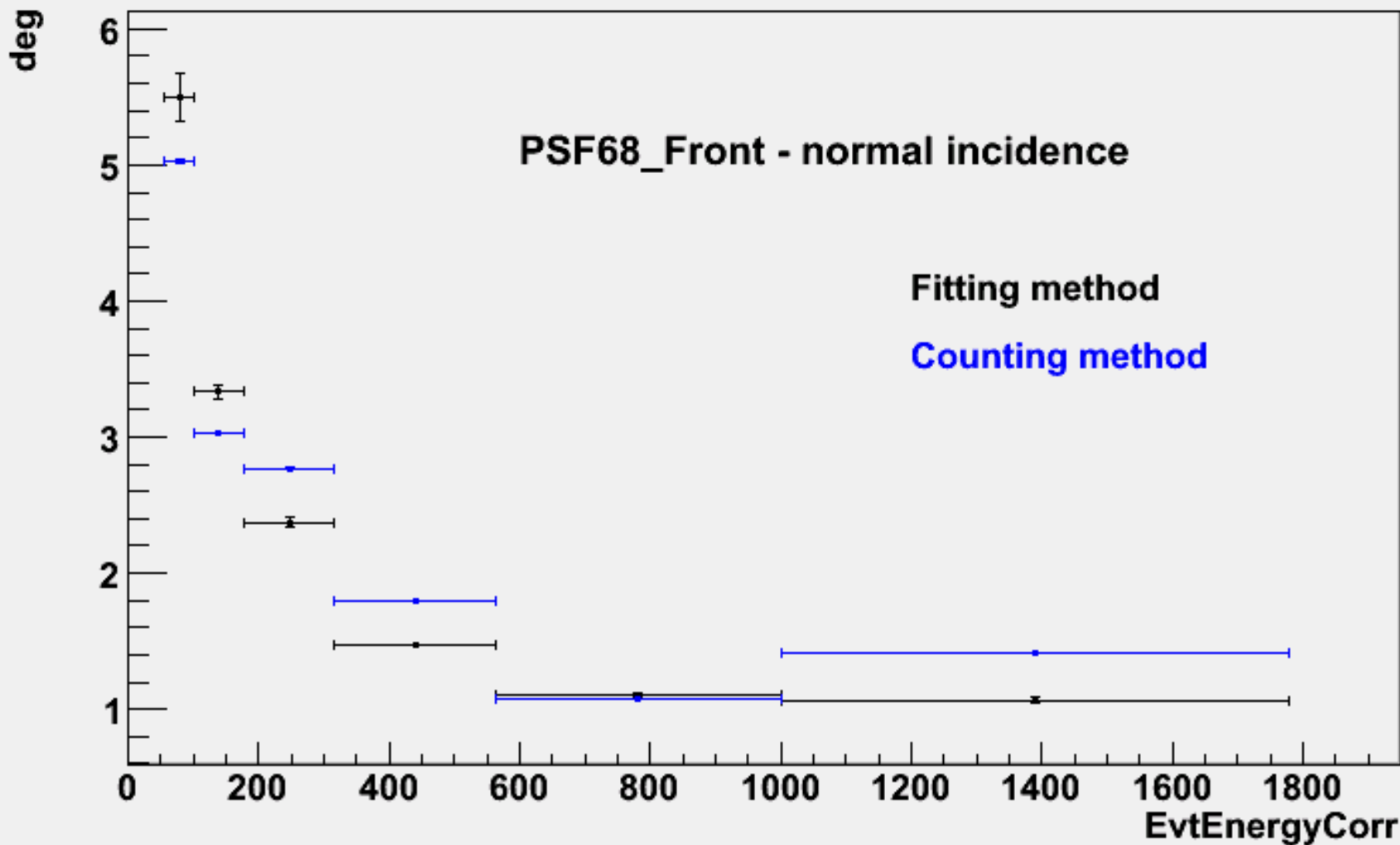
- ❑ Less sensitive to tails
- ❑ Bad fit over 1 GeV – must investigate



PSF - DATA

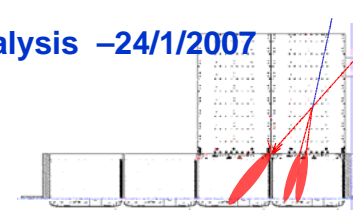
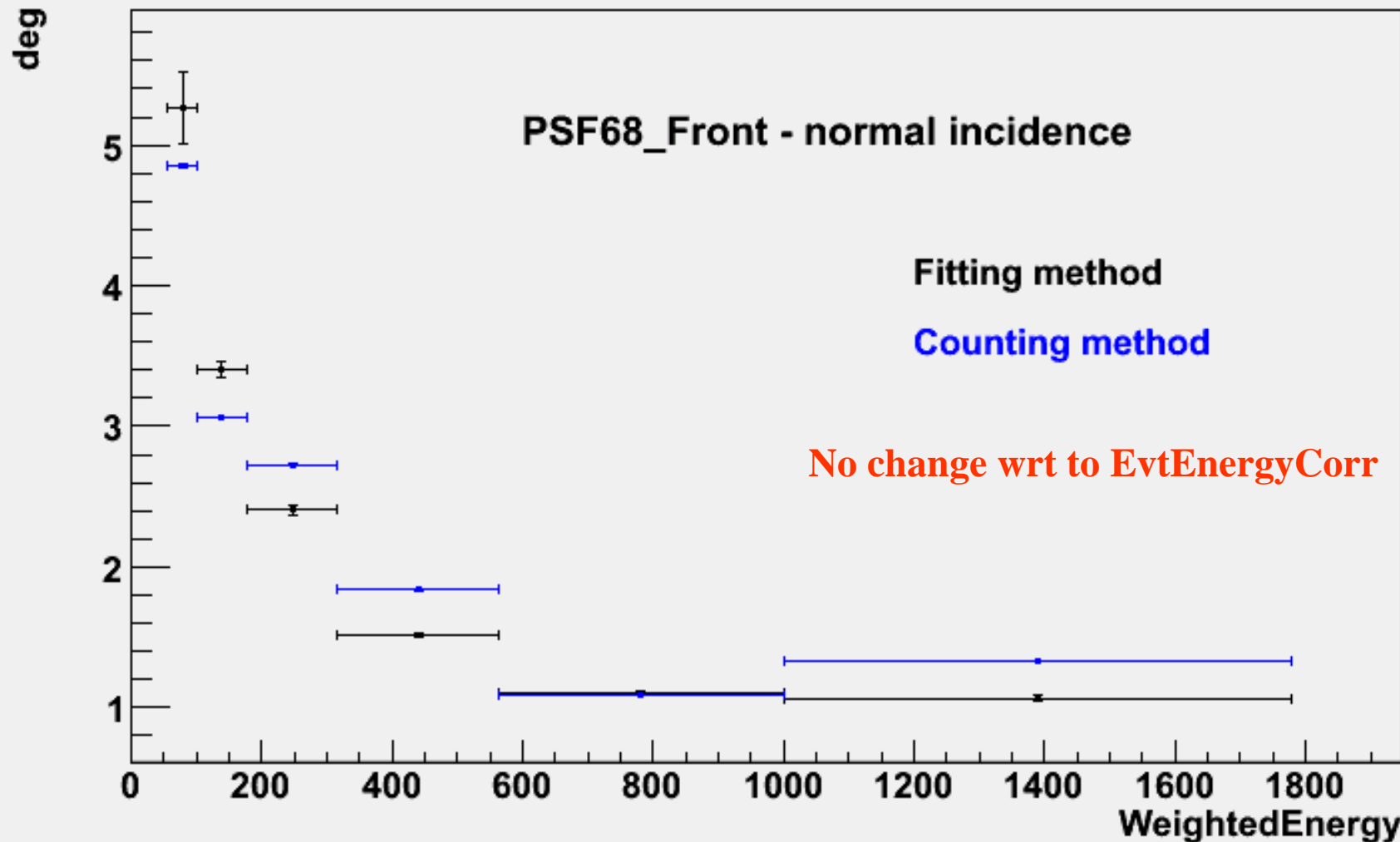


Graph



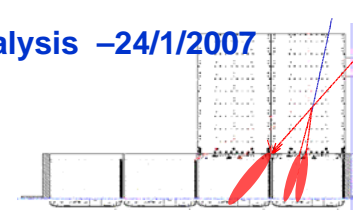


PSF – DATA – weighed E

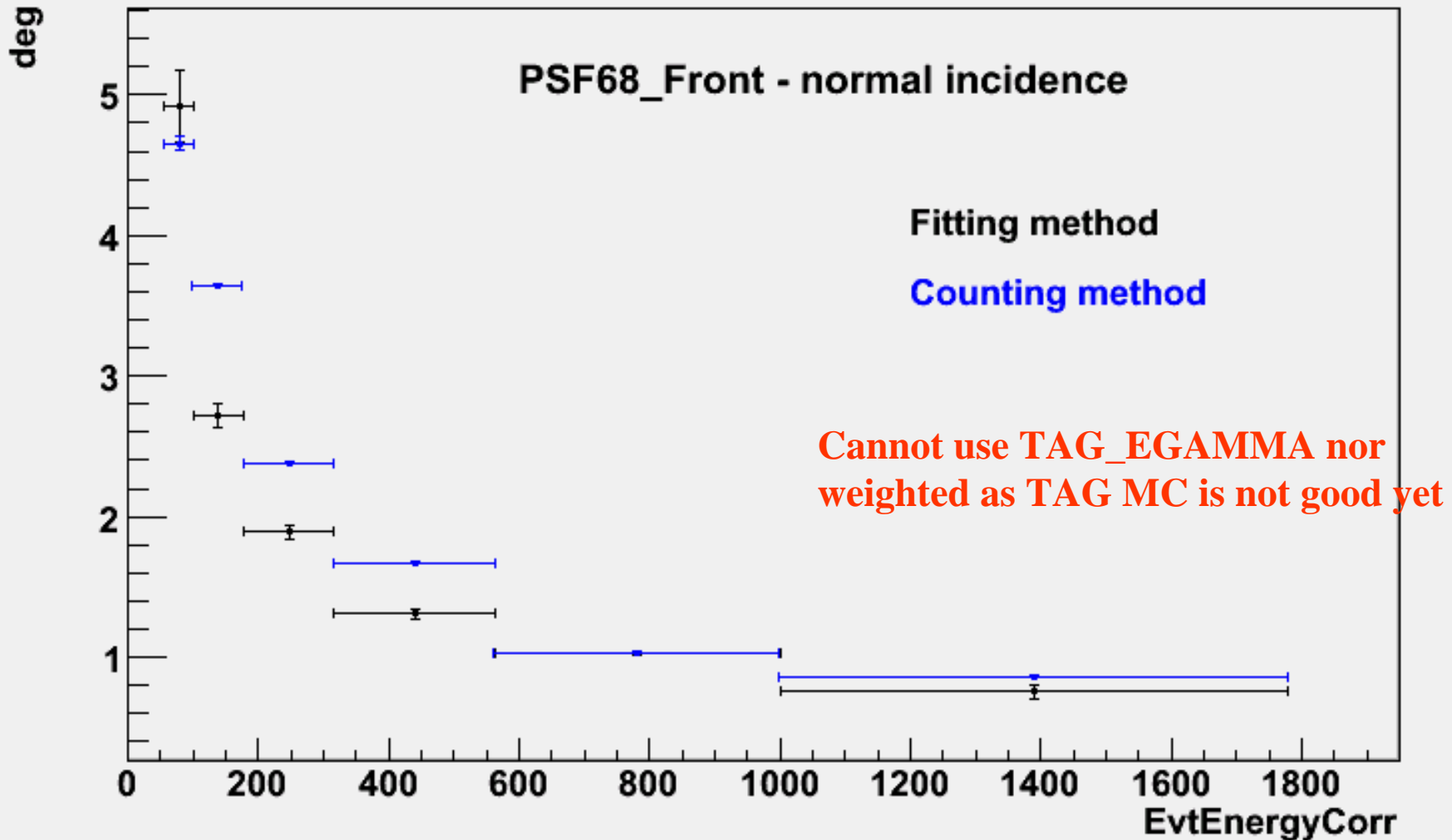
**Graph**



PSF - MC

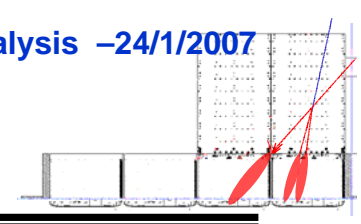


Graph





PSF68 – DATA/MC table



- ☐ Apologize for the brutal dump ...
- ☐ psfTB is taken from fit method
- ☐ Data

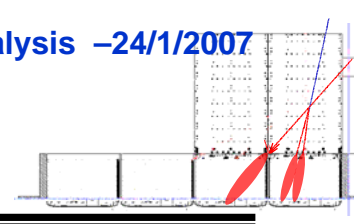
E =78.1 - PSF_68 = 5.56915 +- 0.171887 ===== psfTB68 4.84537 +- 0.0172918
E =138.9 - PSF_68 = 3.09397 +- 0.0515661 ===== psfTB68 2.80666 +- 0.00276346
E =247 - PSF_68 = 2.16578 +- 0.0515661 ===== psfTB68 2.49179 +- 0.00139402
E =439.25 - PSF_68 = 1.23759 +- 0.0171887 ===== psfTB68 1.44477 +- 0.000387109
E =781.15 - PSF_68 = 0.928192 +- 0.0171887 ===== psfTB68 1.08013 +- 0.000257387
E =1389 - PSF_68 = 0.962569 +- 0.0171887 ===== psfTB68 0.964842 +- 0.000215802

☐ MC

E =78.1 - PSF_68 = 4.91598 +- 0.257831 ===== psfTB68 4.64828 +- 0.0524718
E =138.9 - PSF_68 = 2.71582 +- 0.0859437 ===== psfTB68 3.64815 +- 0.0126307
E =247 - PSF_68 = 1.89076 +- 0.0515662 ===== psfTB68 2.37492 +- 0.00319921
E =439.25 - PSF_68 = 1.30634 +- 0.0343775 ===== psfTB68 1.66649 +- 0.00116401
E =781.15 - PSF_68 = 1.03132 +- 0.0171887 ===== psfTB68 1.02586 +- 0.000448264
E =1389 - PSF_68 = 0.756304 +- 0.0515662 ===== psfTB68 0.853809 +- 0.000645278



PSF – DATA/MC table



☐ Disregard last bin because of fit problem

☐ Counting method gives higher ratios

☐ Data

$$E = 78.1 - \text{PSF_95/psf68} = 3.12231$$

$$E = 138.9 - \text{PSF_95/psf68} = 2.80826$$

$$E = 247 - \text{PSF_95/psf68} = 3.45388$$

$$E = 439.25 - \text{PSF_95/psf68} = 3.48109$$

$$E = 781.15 - \text{PSF_95/psf68} = 2.81688$$

$$E = 1389 - \text{PSF_95/psf68} = 1.66661$$

☐ MC

$$E = 78.1 - \text{PSF_95/psf68} = 2.71561$$

$$E = 138.9 - \text{PSF_95/psf68} = 2.87974$$

$$E = 247 - \text{PSF_95/psf68} = 3.1232$$

$$E = 439.25 - \text{PSF_95/psf68} = 2.8102$$

$$E = 781.15 - \text{PSF_95/psf68} = 2.20731$$

$$E = 1389 - \text{PSF_95/psf68} = 1.84996$$