

Report_170816

Information

- Data
 - Run65 Minimum bias data with good spill selection
- M.C.
 - $1e9$ KL3 π^0 generation for checking general response
 - $1e8$ KL3 π^0 generation for getting event seed
 - ongoing
- All distributions are normalized with P.O.T.
 - $3.8e7/2e14$ (3 π^0 flux)

Incident Gamma Energy

- Reconstruction of incident energy of 6th gamma going to Barrel
- Opening angle is related to HitZ of Barrel

$$E_6 = \frac{M_\pi^2}{2E_5(1-\cos\theta)}$$

- Only one hit in Barrel

Events statistics (M.C.), 1e8

- After full selection : 3891
 - Veto & Kinematical cut & Only one hit
- Total mismatched event(or mis-reco) : 10
 - Other decay events : 0
 - two gammas going to barrel : 8
 - No gamma going to barrel : 2
- Low Sampling Fraction events (good evt)
 - 13
- No mismatched & Low S.F.

Bad event study

- Two gammas going to barrel (8)
 - Determined by GenParticleEndPos
- One gamma makes clear hit on barrel
- The other gamma has strange GenParticleEndPos
 - This makes wrong decision.
- For the other gamma, gamma matching with extrapolation is applied

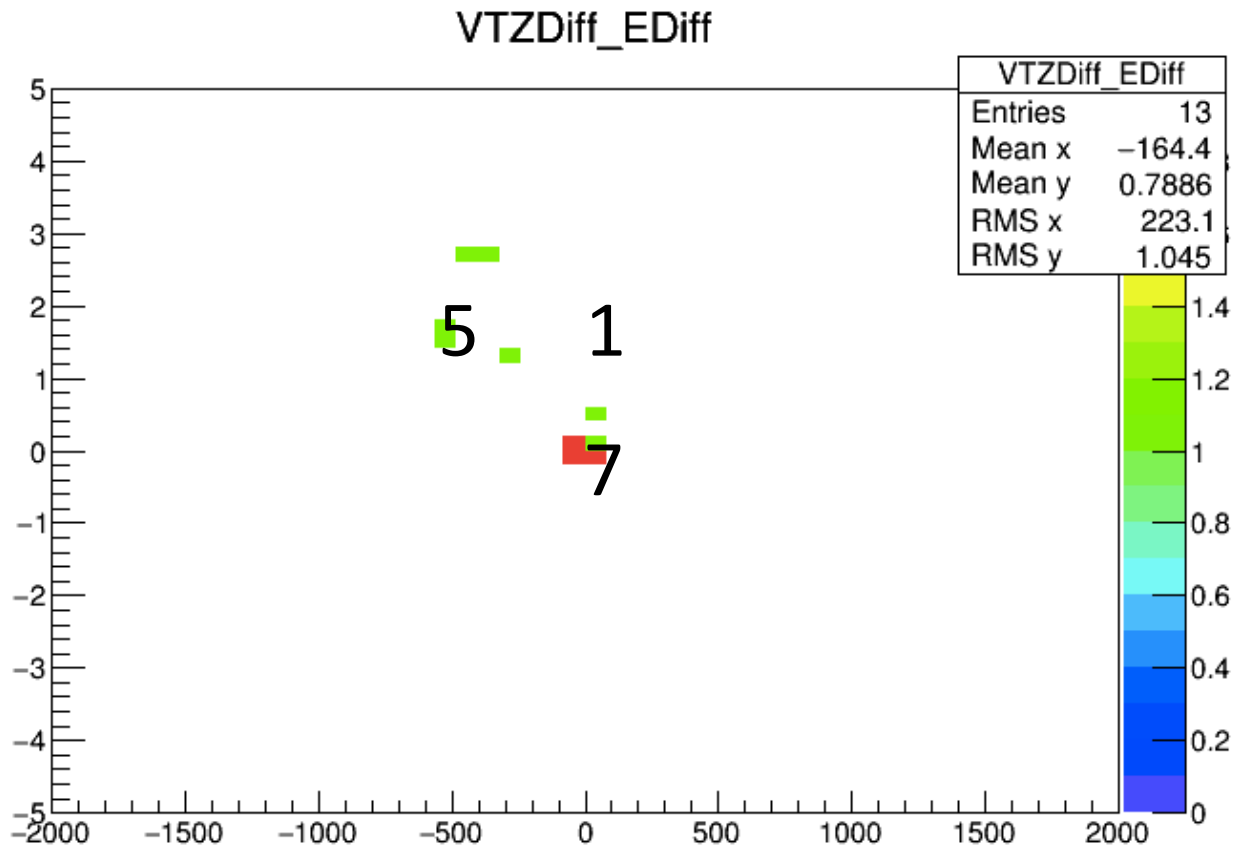
Extrapolation gamma matching

- $\text{MomX}/\text{DisplacementX} = \text{MomY}/\text{DisplacementY} = \text{MomZ}/\text{DisplacementZ}$
- All eight events have good event quality
- Conclusion
 - Strange GenParticleEndPos makes wrong decision

Bad event study

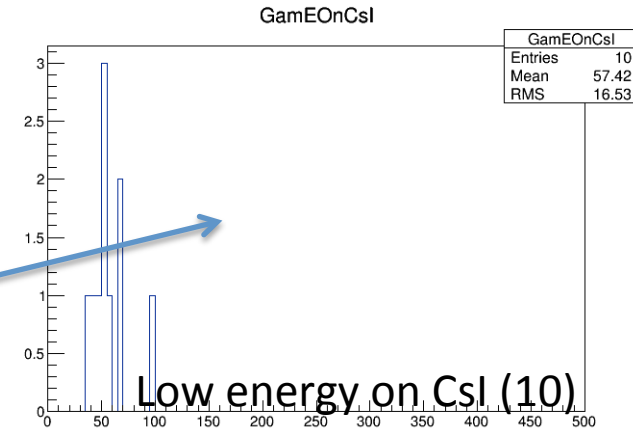
- No gamma going to barrel (2)
- Csl (or OEV)
 - $X=202, Y=874, Z=6158$
- Downstream beam pipe
 - $X=64, Y=115, Z=7434$

Low S.F. event

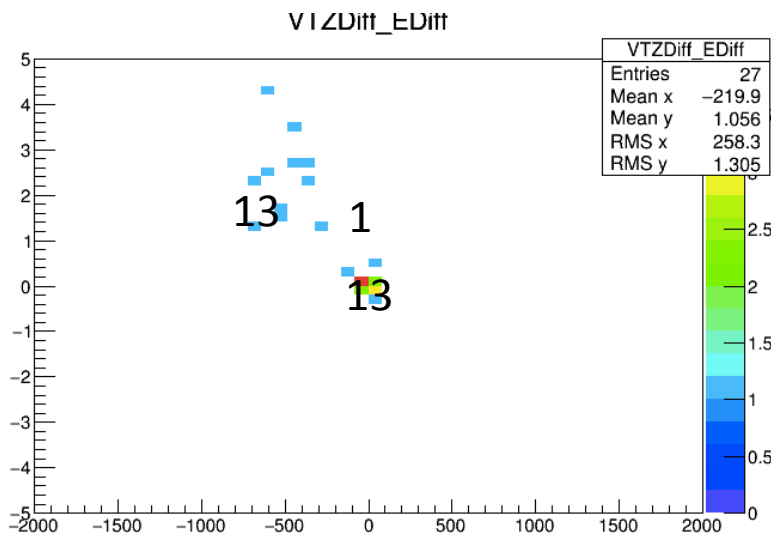


3e8 Generation

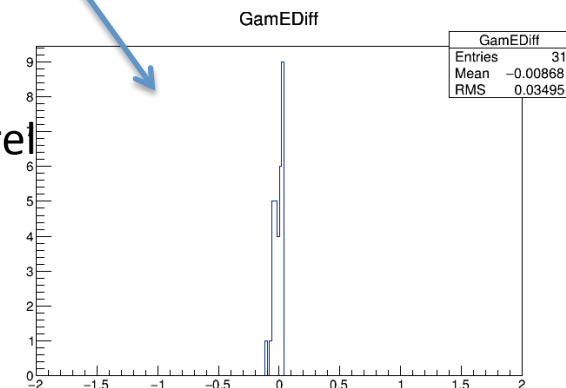
- Total Stat : 11563
- Bad event : 43
 - No Gamma going to barrel : 12
 - Two Gamma going to barrel : 31
 - All from strange GenParticleEndPos
- Low S.F. event : 28->27



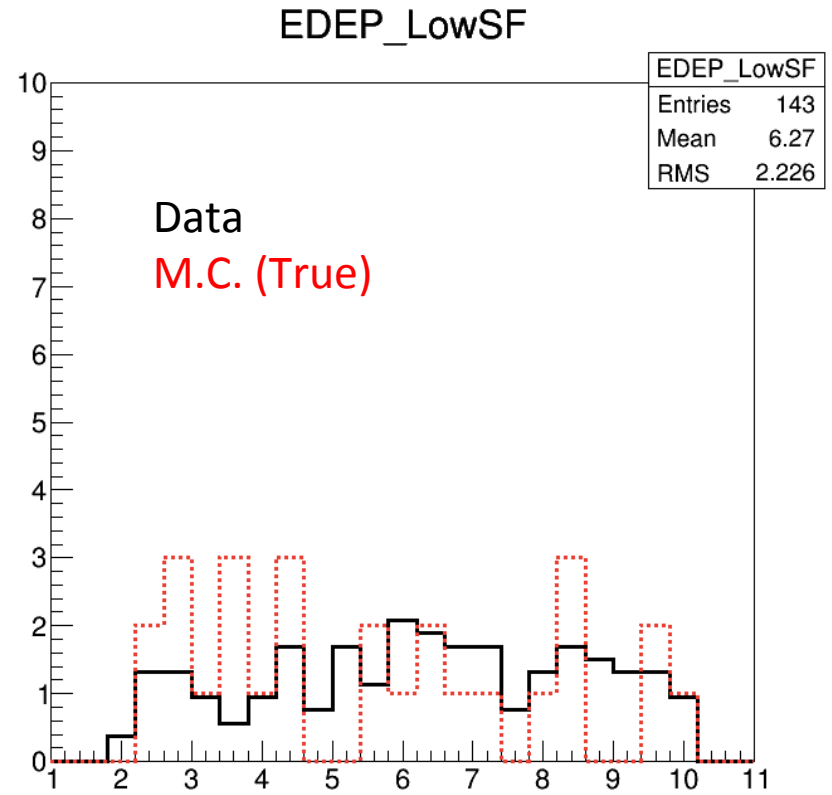
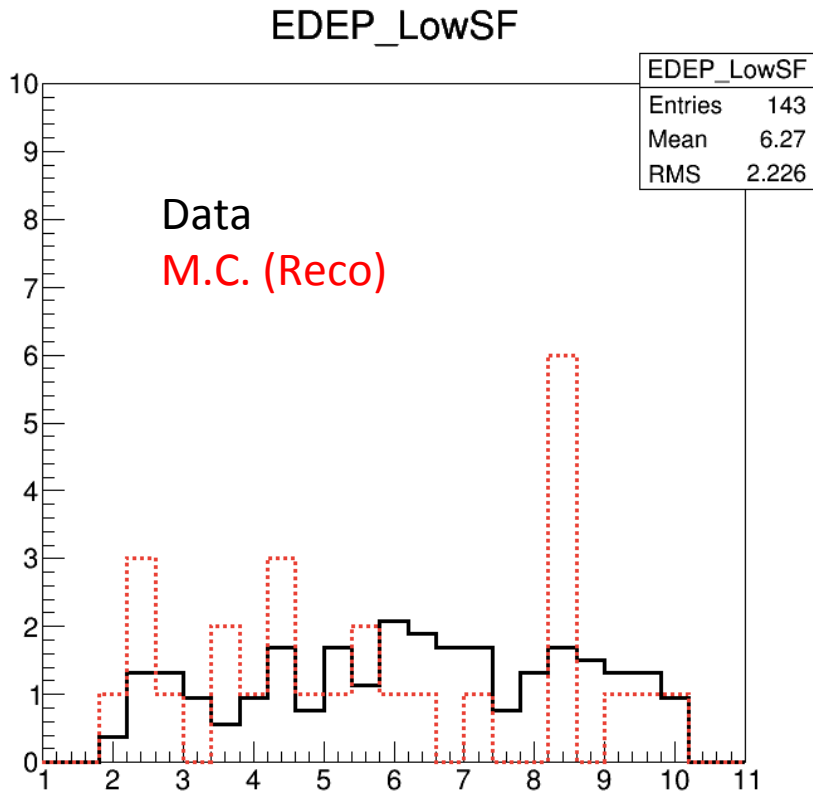
Downstream Beam pipe(1)
 X=64,Y=115,Z=7434
 Front Barrel (1)
 X=437,Y=335,Z=2730



*one event removed
 (two gammas on barrel event)

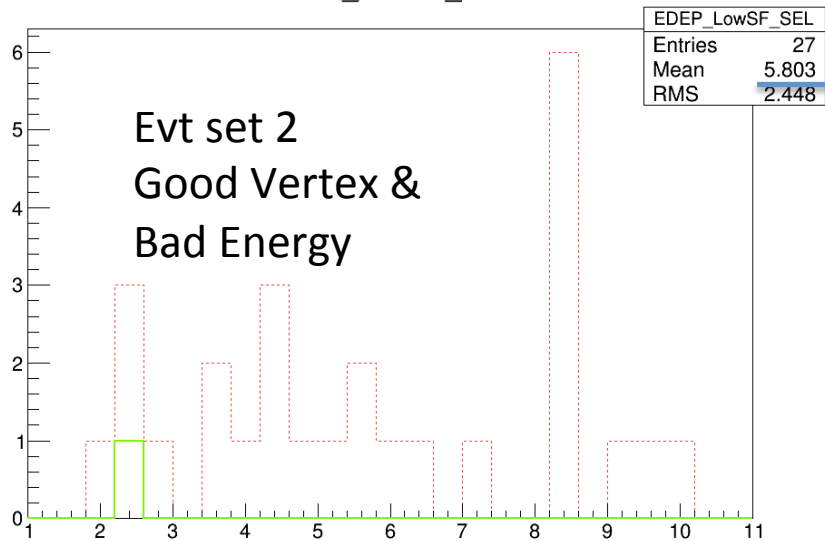
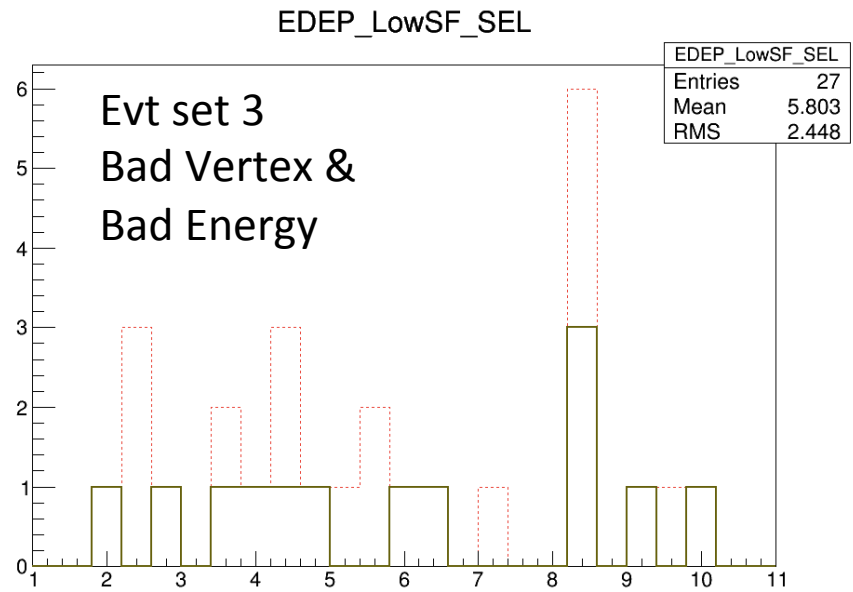
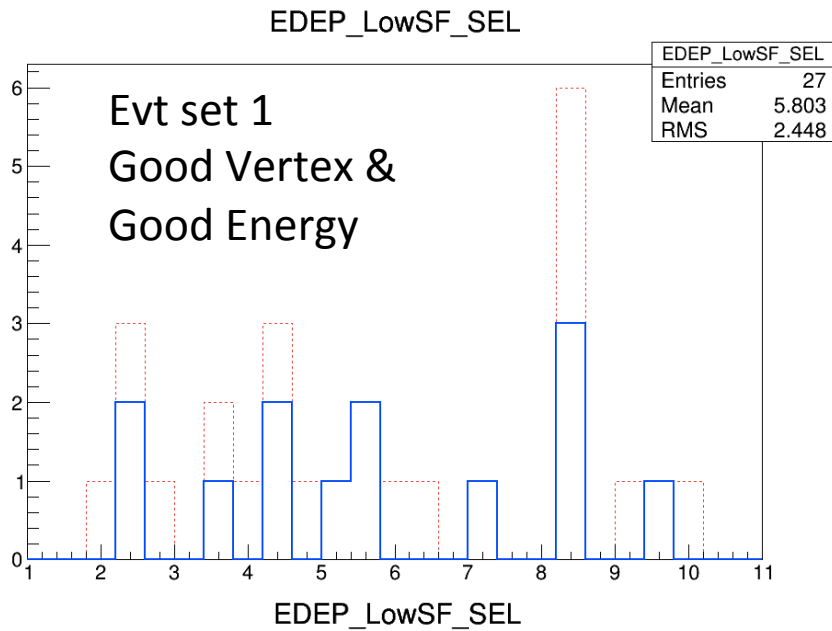


Energy deposit



Data: 26.97 event (normalized to M.C.)

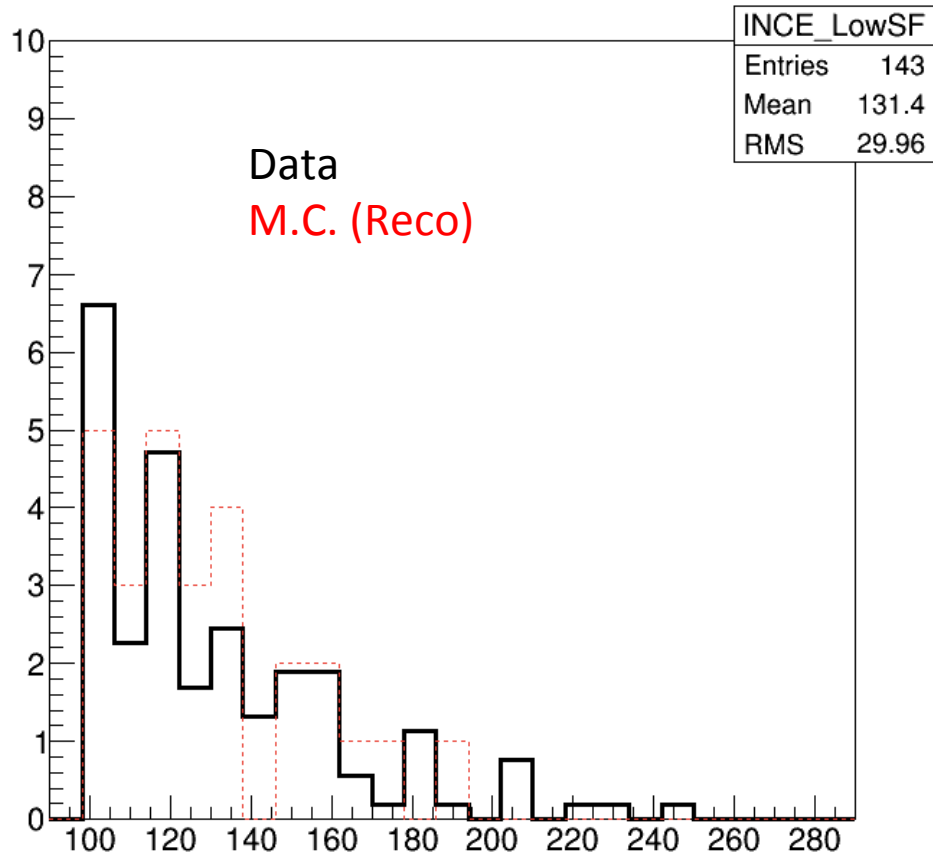
decomposition



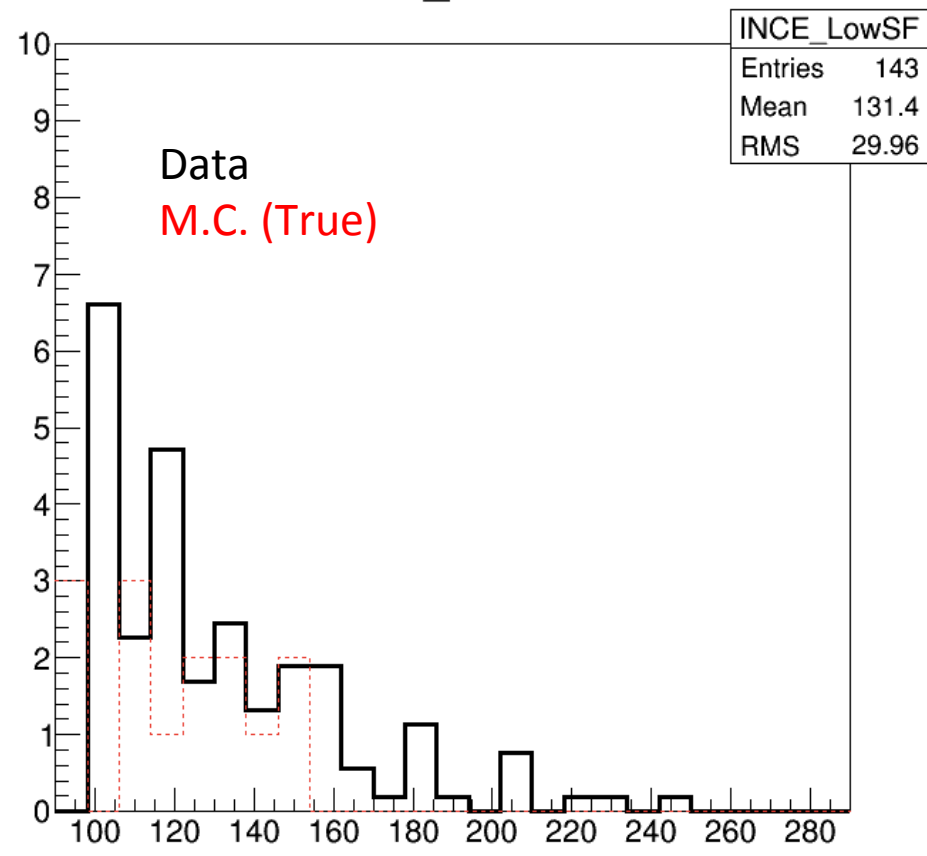
GammaHitPosition(Reco) –
GammaHitPosition(True) = 600mm

Incident energy

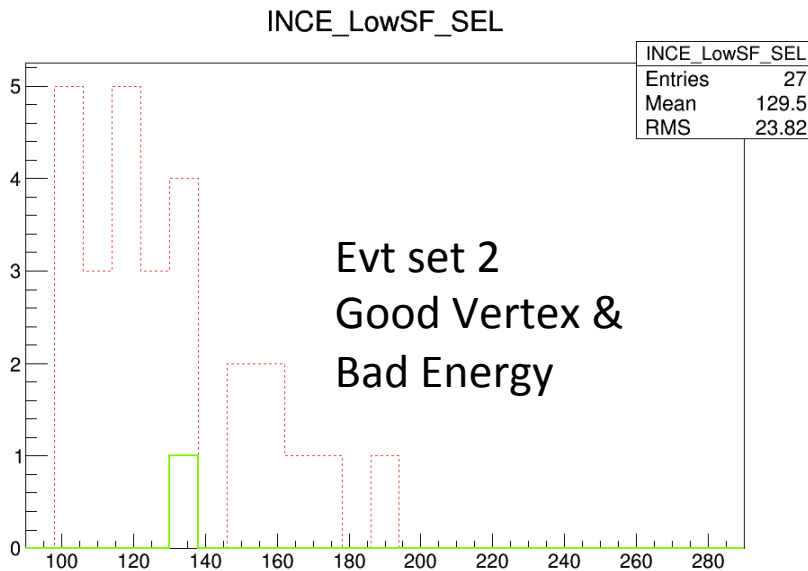
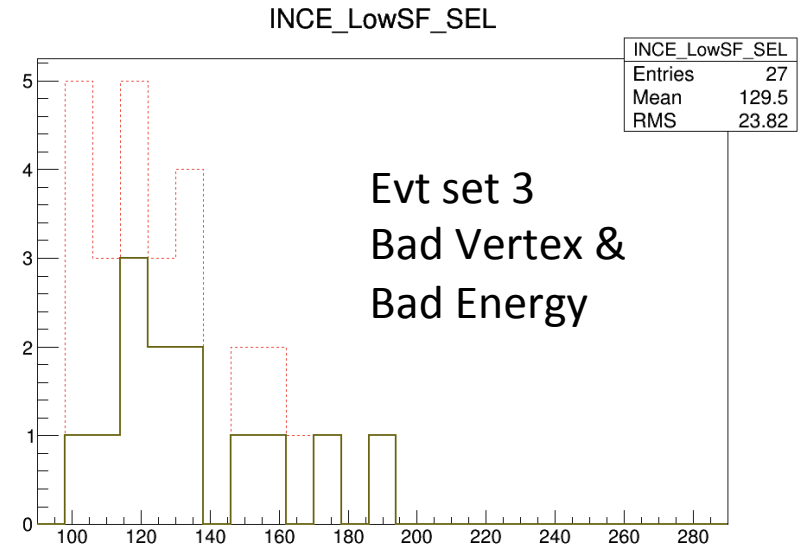
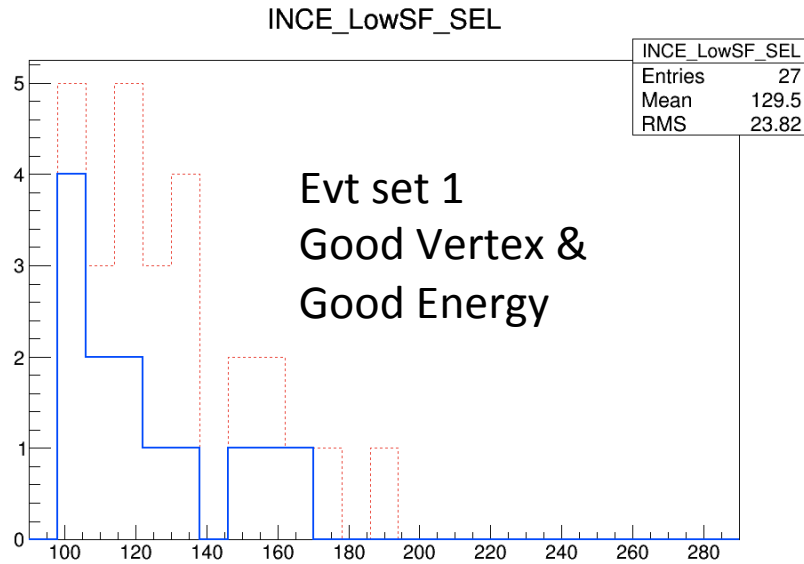
INCE_LowSF



INCE_LowSF




decomposition



Evt set 2

EDEP	Time	ModID	X	Y	Z	PID	TrackID
1.177	21.83	44	-853.3	769.3	4475	11	12
0.9767	21.85	44	-857	770.7	4480	11	12
0.06876	22.62	44	-944.2	883.7	4659	11	12
0.02426	22.62	44	-944.1	883.6	4659	11	12
0.02457	22.62	44	-944	883.5	4659	11	12
0.03362	22.62	44	-944	883.5	4659	11	12
0.02865	22.62	44	-943.9	883.4	4659	11	12
0.02561	22.62	44	-943.8	883.3	4659	11	12
0.03299	22.62	44	-943.8	883.3	4659	11	12
0.02547	22.62	44	-943.8	883.4	4660	11	12
0.02729	22.62	44	-943.8	883.4	4660	11	12
0.03862	22.62	44	-943.8	883.5	4660	11	12
0.1202	22.62	44	-943.8	883.6	4660	11	12

 0.8ns