

Charged pion analysis

π^\pm Production in transverse-single-spin asymmetries for midrapidity at pA collisions $\sqrt{s_{NN}} = 200$ GeV in Run15

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Jaehee Yoo

Data information (previous)

- Datasets:

Run15pAu200CAnoVTXERTPro104

- nDSTs: CNT

- Trigger : 'ert_4x4c==1'

- π^\pm Identification Cuts :

I. $-2 < p_T < 25$ (GeV/c)

II. quality == 31 or 63

III. n1 > 0

IV. $|BBCZ| < 10$ (cm)

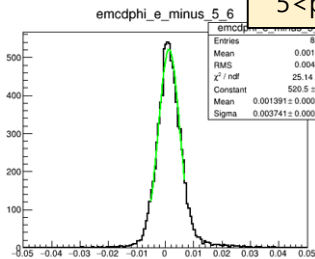
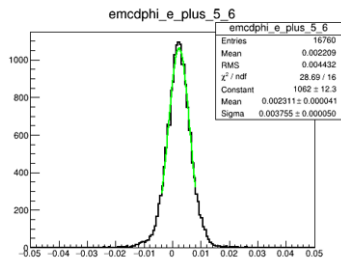
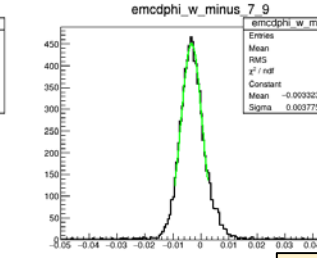
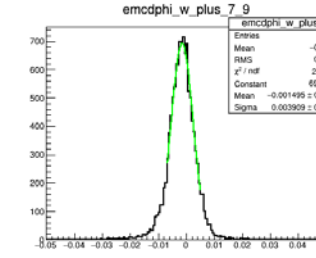
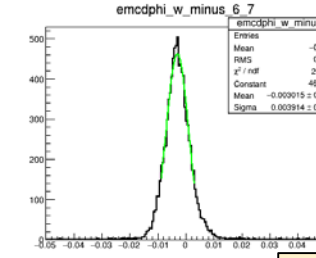
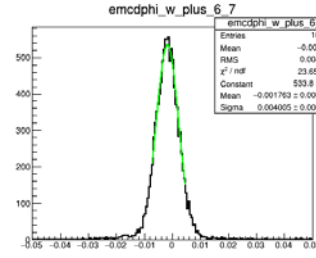
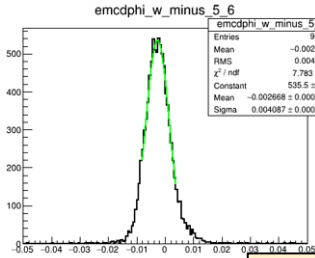
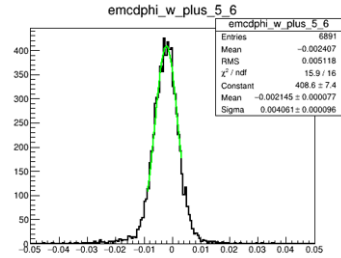
V. $2 < |DCZed| < 70$ (cm)

VI. Shower shape (prob) < 0.1

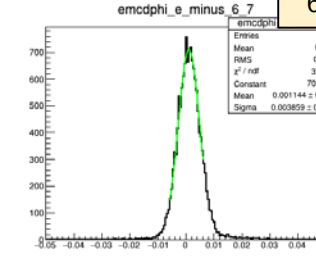
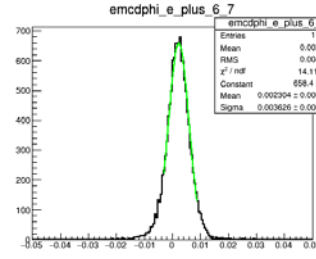
VII. $0.2 < emce/p < 0.8$

VIII. Warnmap Cut

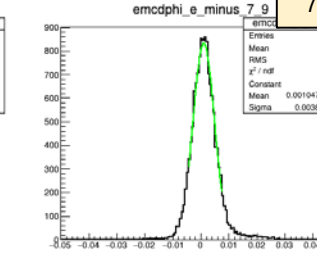
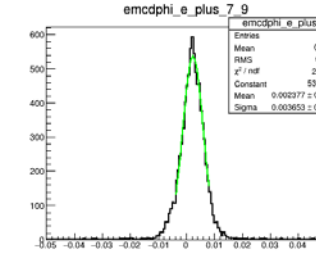
EMCa_dφ (Run 15pAu200CAnoVTXERTPro104)



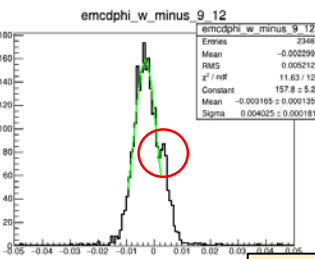
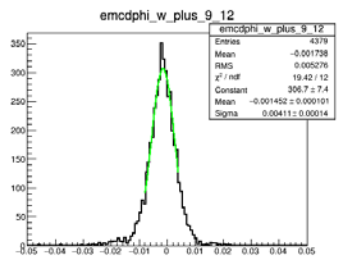
5 < pT < 6



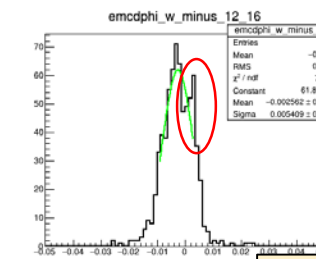
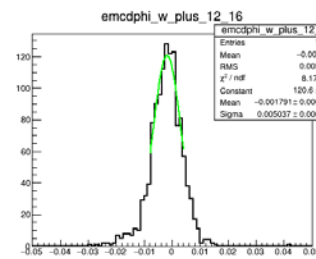
6 < pT < 7



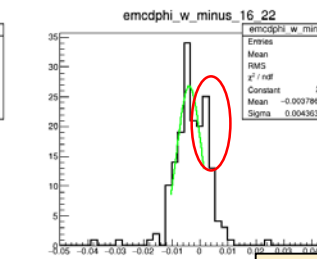
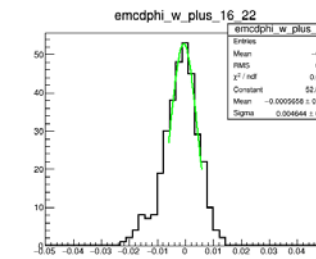
7 < pT < 9



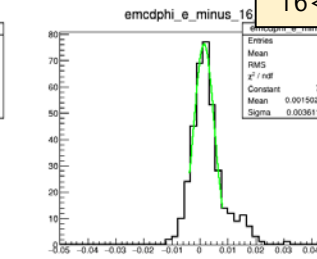
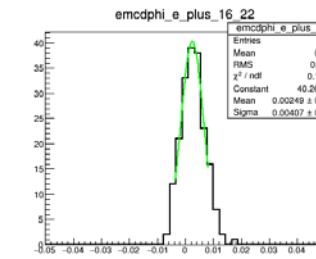
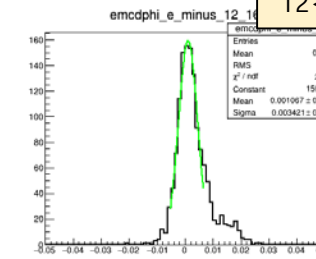
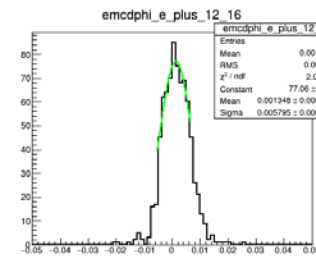
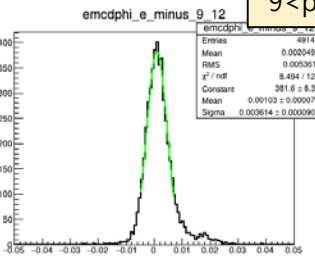
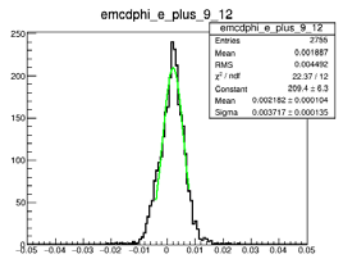
9 < pT < 12



12 < pT < 16

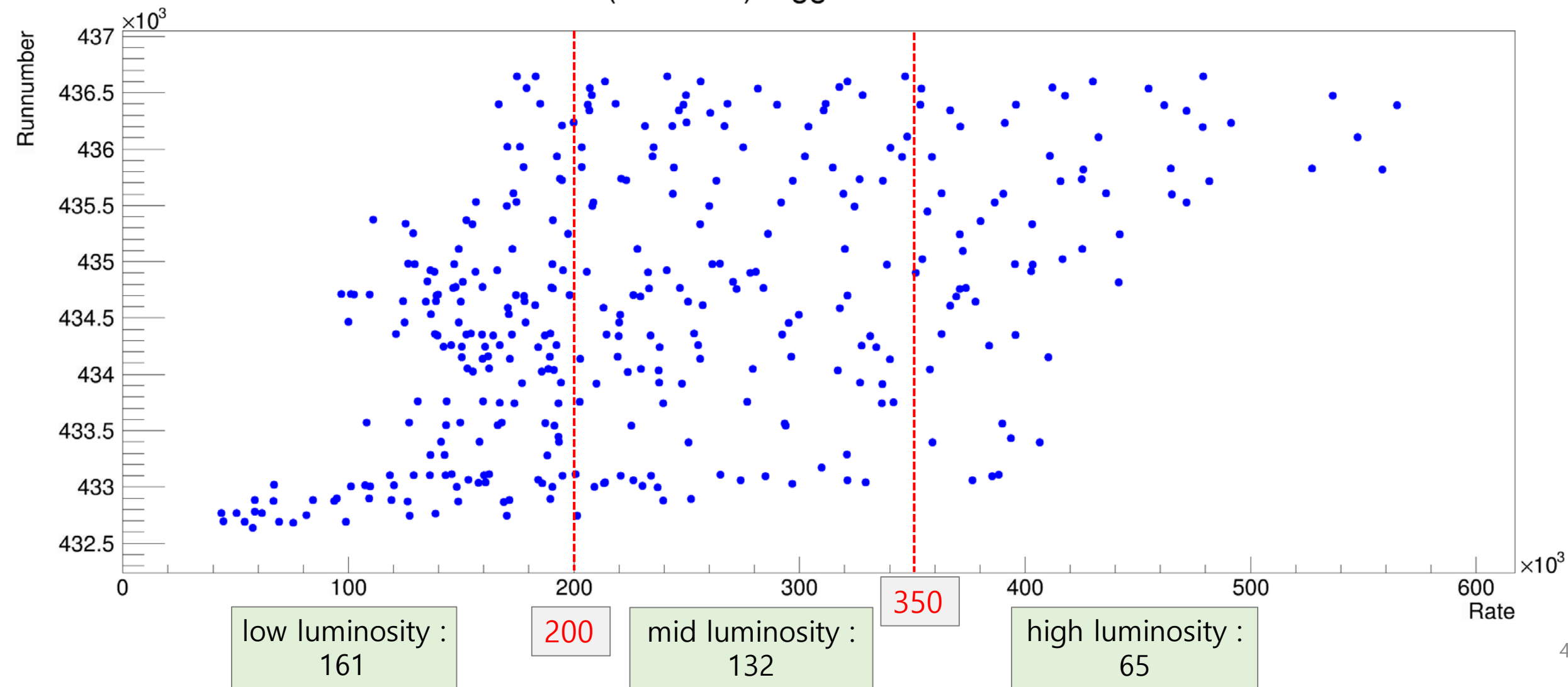


16 < pT < 22



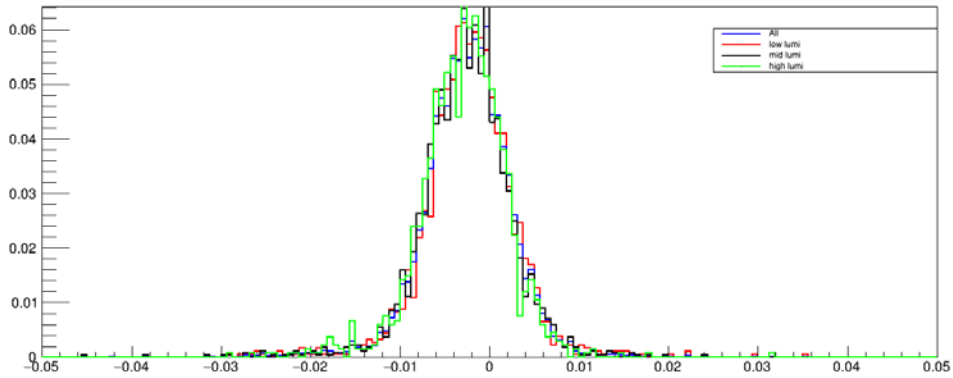
Luminosity

BBCLL1(>0 tubes) trigger rate vs. Runnumber

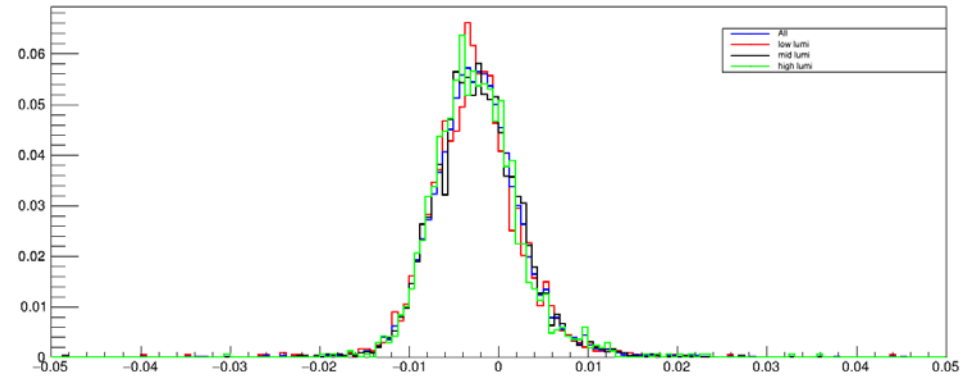


EMCdphi ($5 < p_T < 6$) (all, low, mid, high)

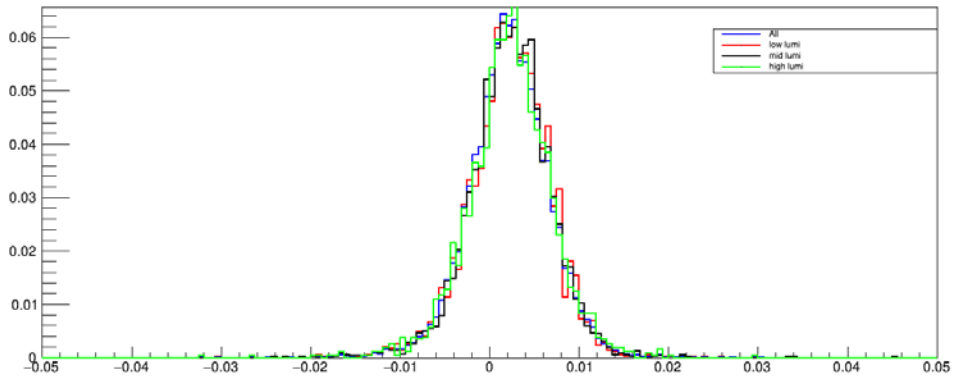
emcdphi_w_plus_5_6



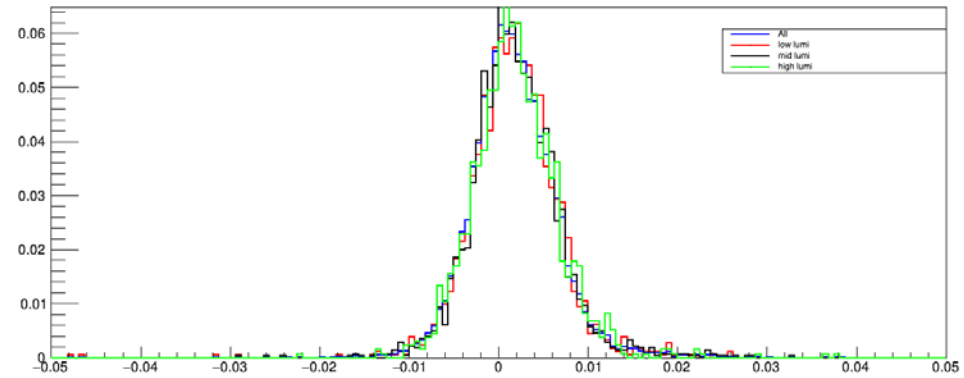
emcdphi_w_minus_5_6



emcdphi_e_plus_5_6



emcdphi_e_minus_5_6

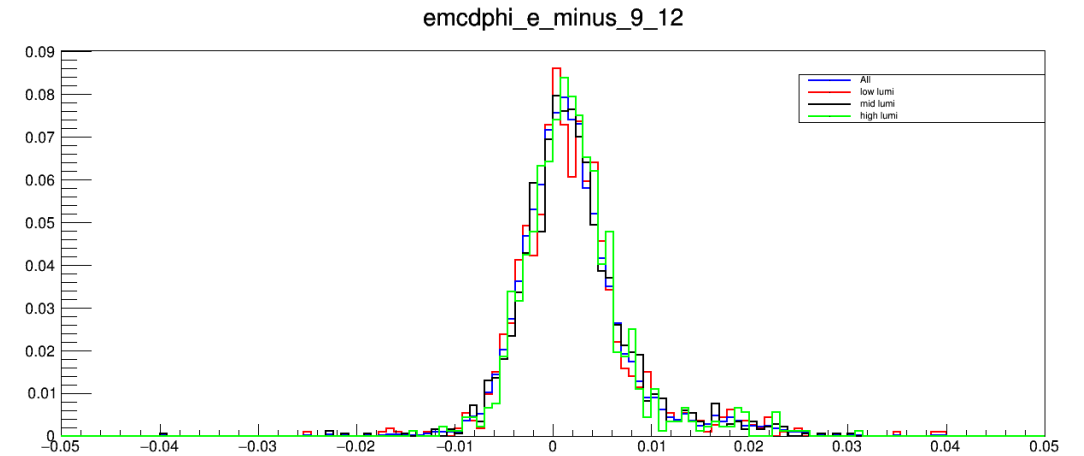
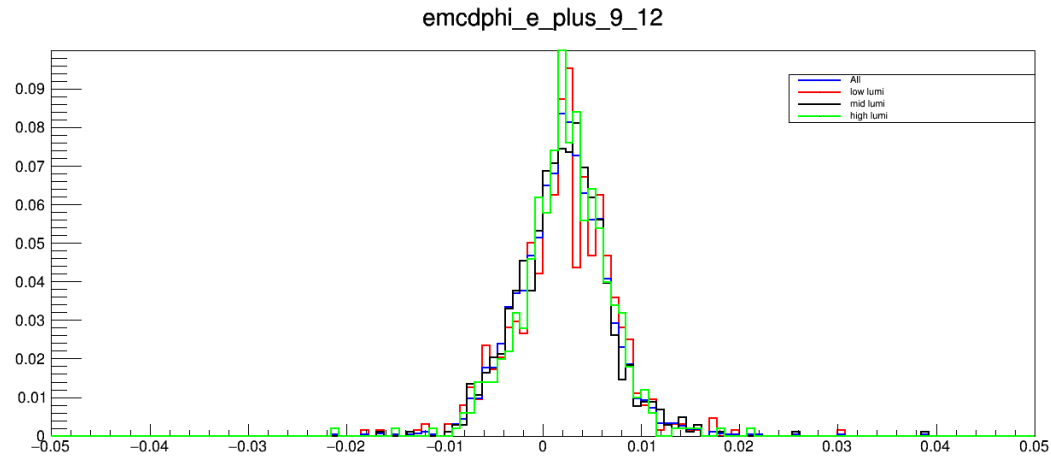
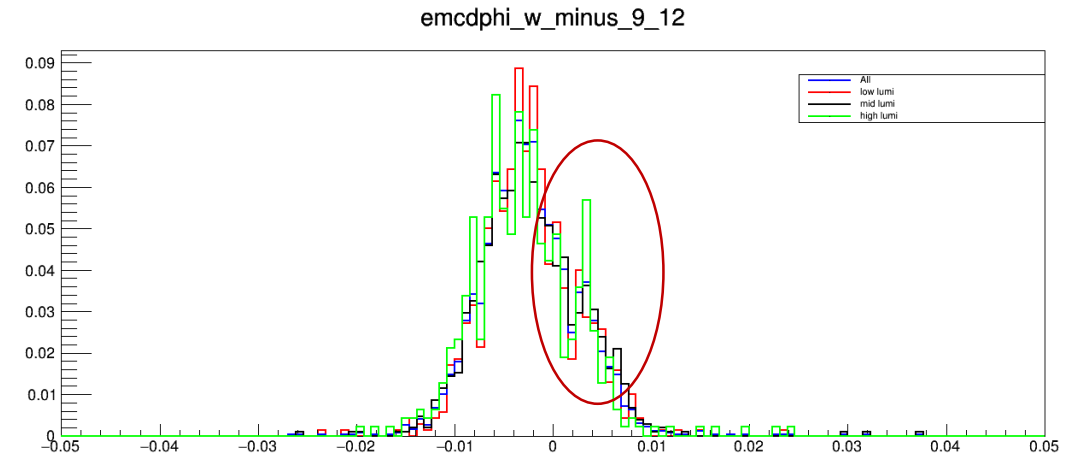
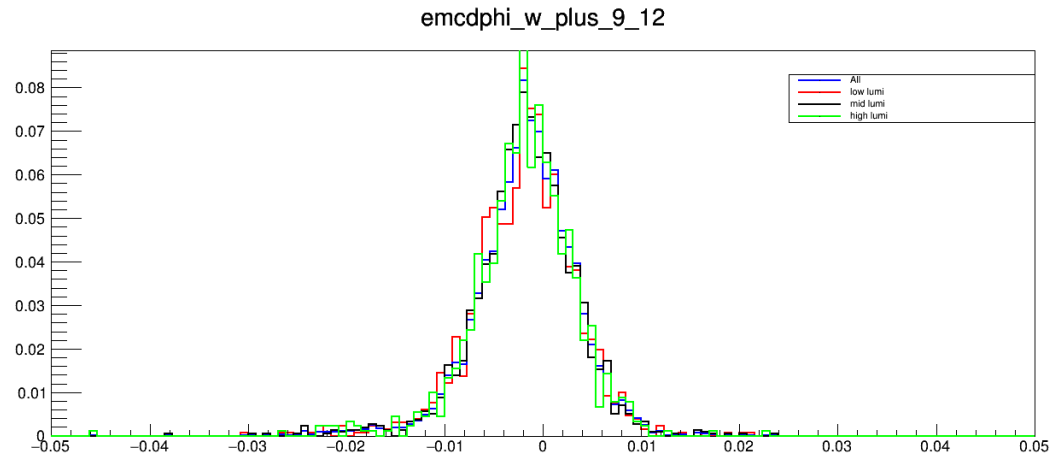


- normalized each histogram.

- ALL
- low luminosity
- mid luminosity
- high luminosity

- Applied Cuts
 - I. $-2 < p_T < 25$ (GeV/c)
 - II. quality == 31 or 63
 - III. $n_1 > 0$
 - IV. $|BBCZ| < 30$ (cm)
 - V. $|DCZed| < 70$ (cm)
 - VI. Shower shape (prob) < 0.01
 - VII. $0.2 < emce/p < 0.7$
 - VIII. Warnmap Cut
 - IX. $pc3dphi > -1000$ && $pc3dz > -1000$
 - X. sect > -1000

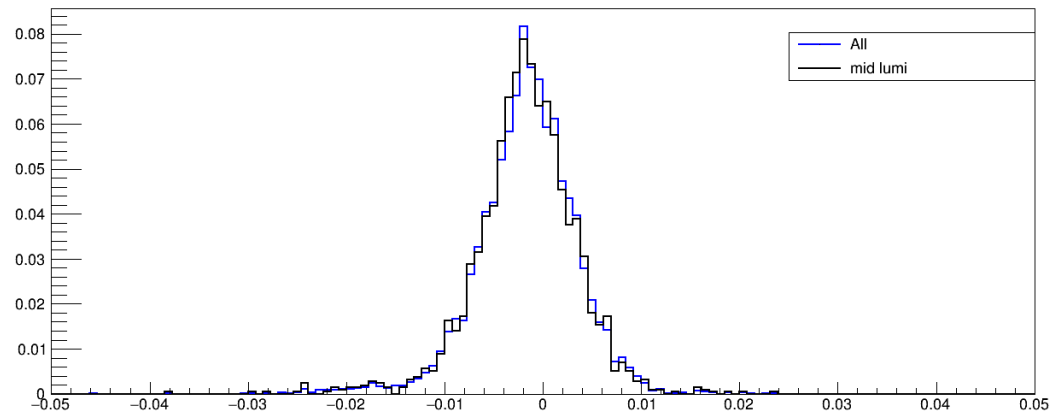
EMCdphi ($9 < p_T < 12$) (all, low, mid, high)



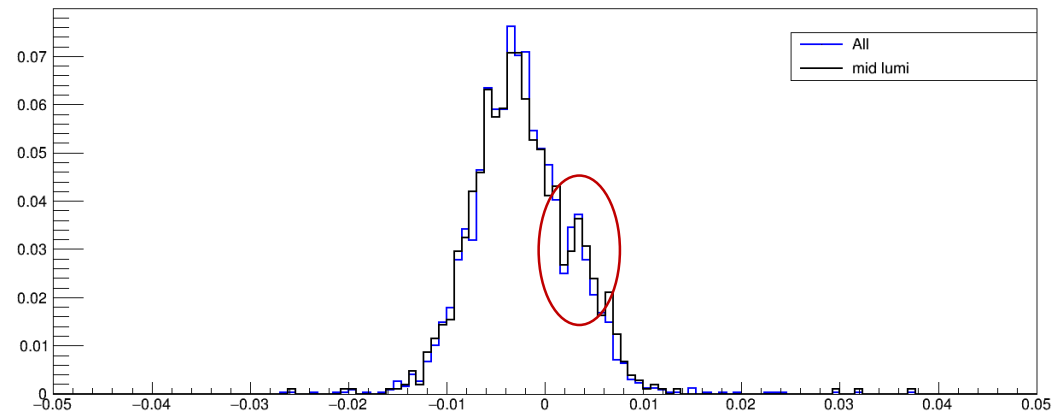
- ALL
- low luminosity
- mid luminosity
- high luminosity

EMCdphi ($9 < p_T < 12$) (mid)

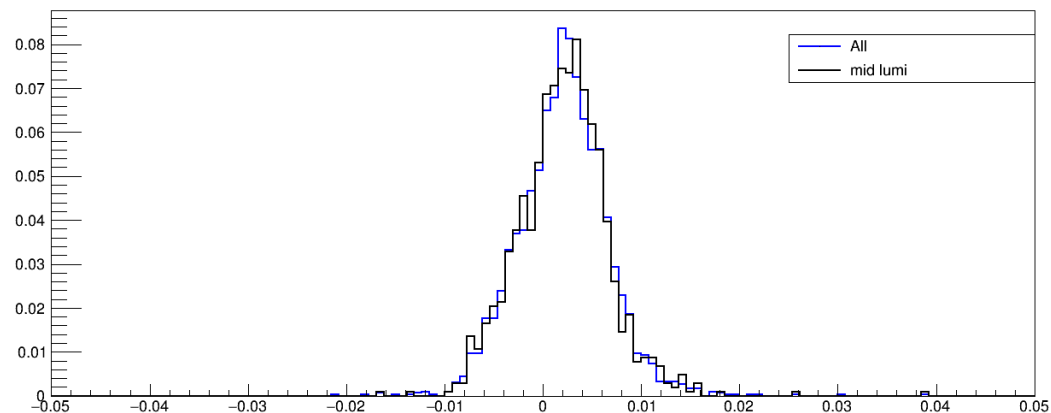
emcdphi_w_plus_9_12



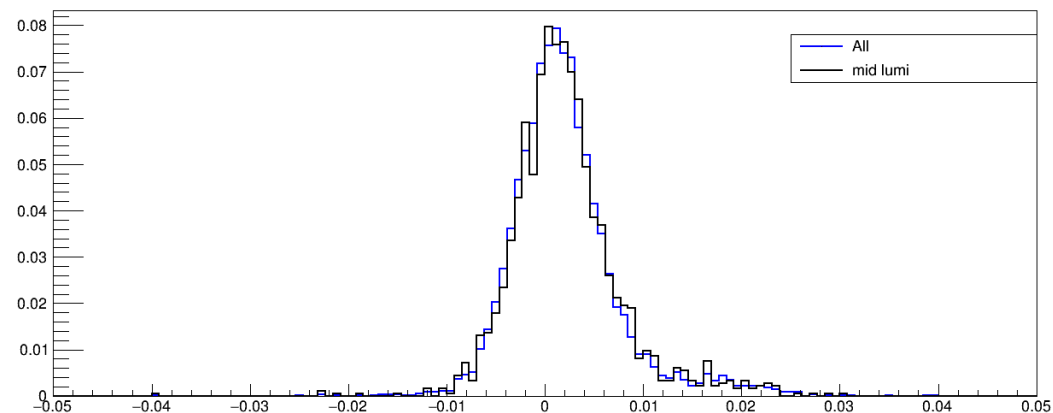
emcdphi_w_minus_9_12



emcdphi_e_plus_9_12



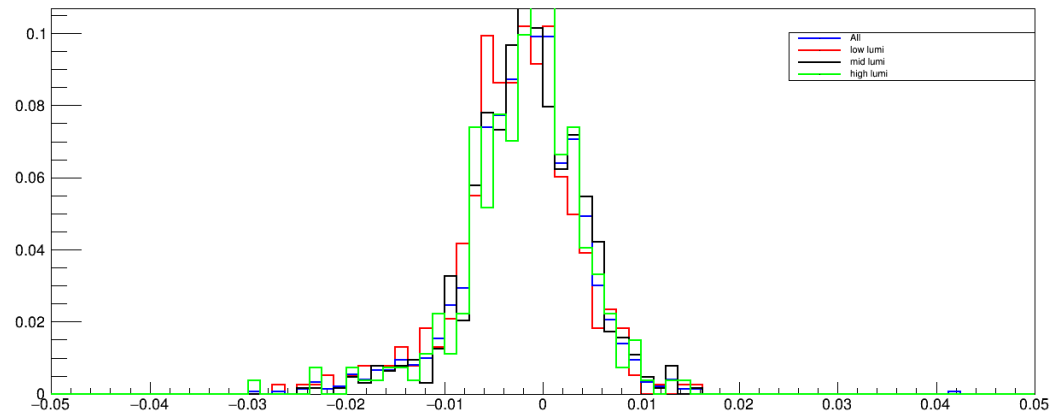
emcdphi_e_minus_9_12



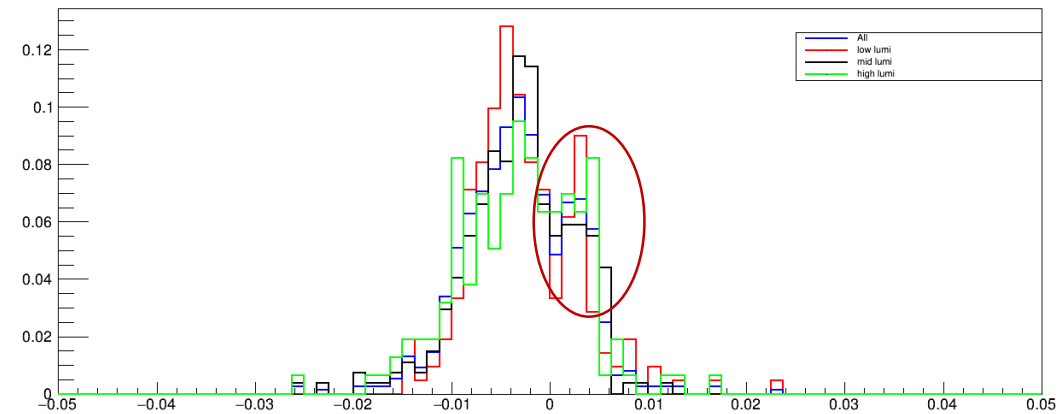
- ALL
- low luminosity
- mid luminosity
- high luminosity

EMCdphi ($12 < p_T < 16$) (all, low, mid, high)

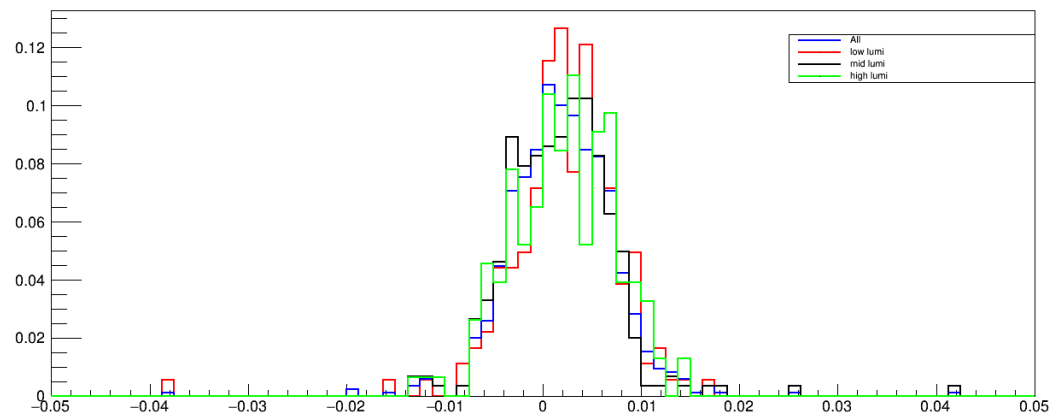
emcdphi_w_plus_12_16



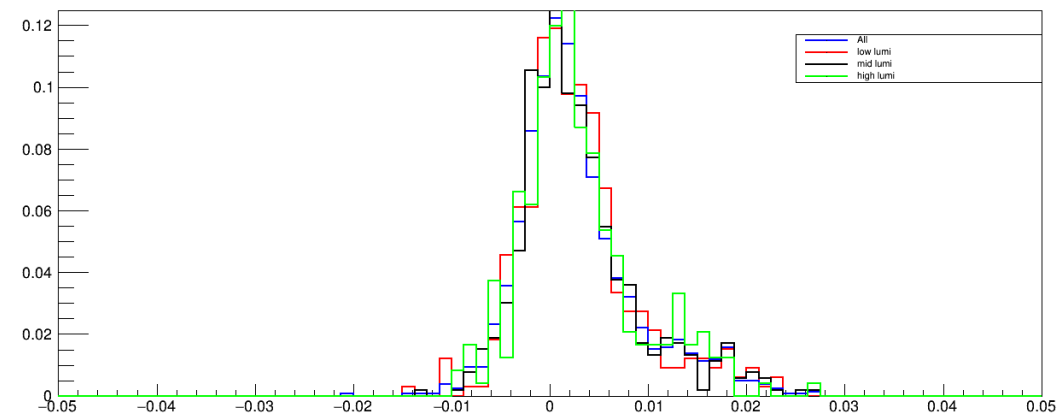
emcdphi_w_minus_12_16



emcdphi_e_plus_12_16



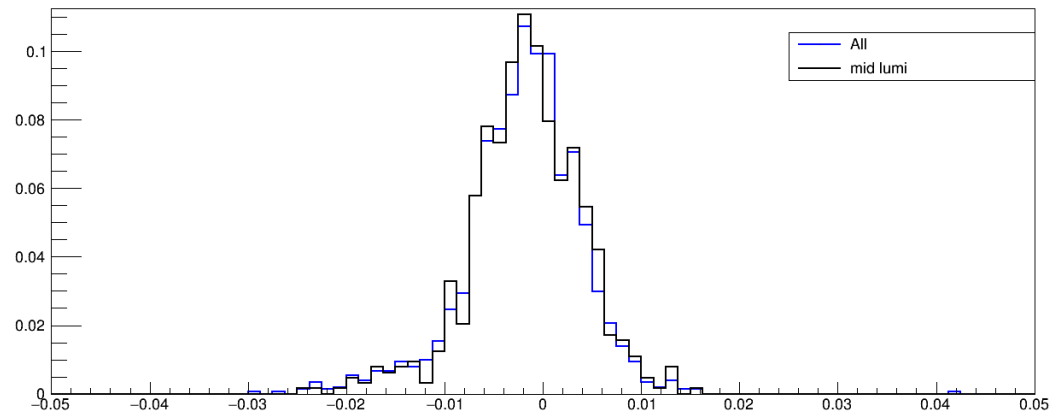
emcdphi_e_minus_12_16



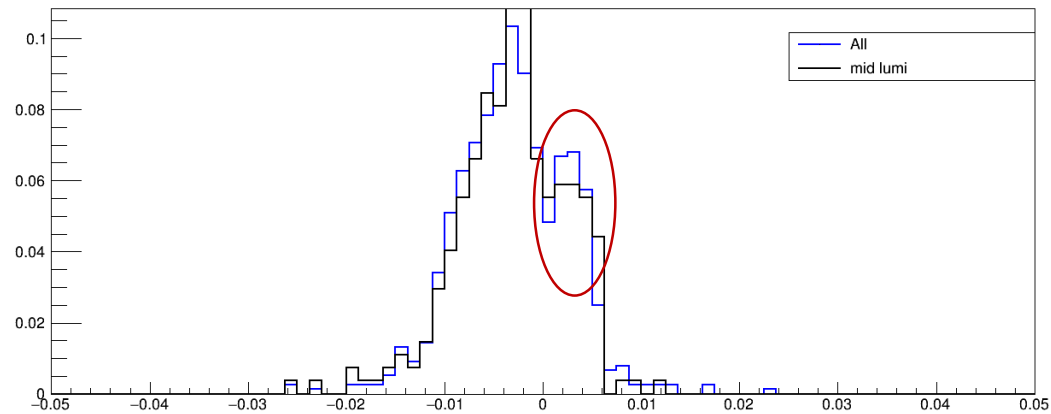
- ALL
- low luminosity
- mid luminosity
- high luminosity

EMCdphi ($12 < p_T < 16$) (mid)

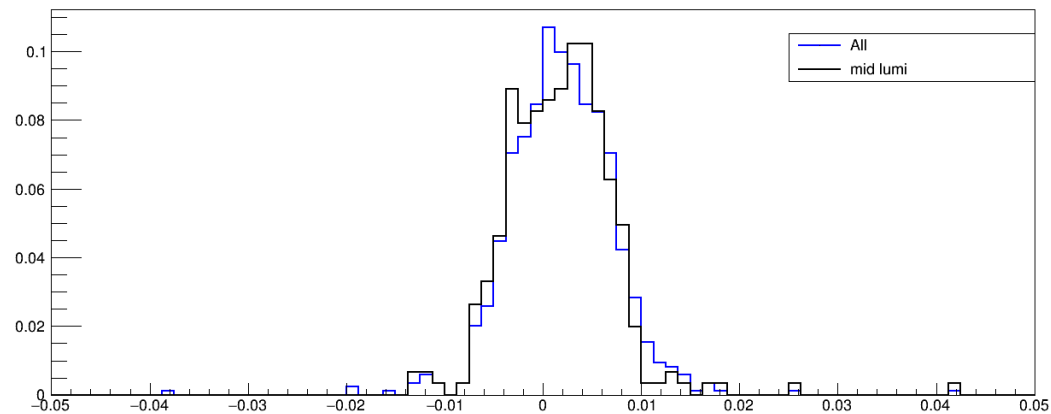
emcdphi_w_plus_12_16



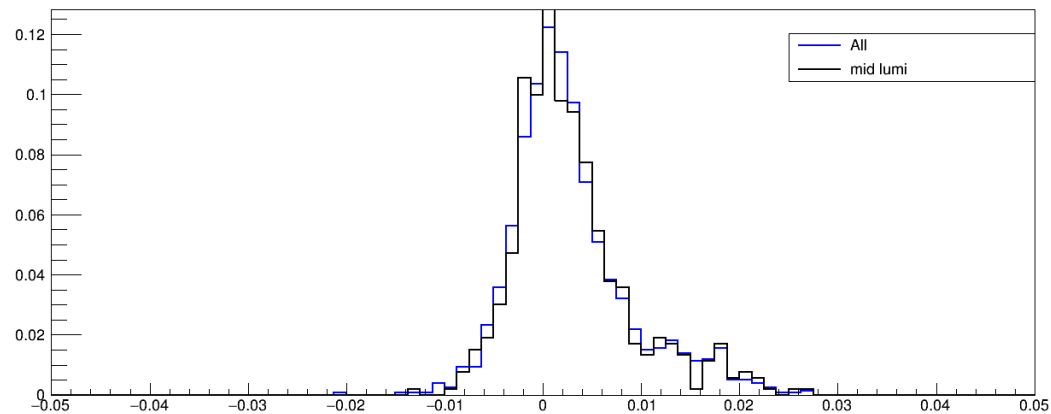
emcdphi_w_minus_12_16



emcdphi_e_plus_12_16



emcdphi_e_minus_12_16



- ALL
- low luminosity
- mid luminosity
- high luminosity

Data information (present)

- Datasets:

Run15pAu200CAERTPro108

- nDSTs: CNT

- Trigger : 'ert_4x4c==1'

- π^\pm Identification Cuts

I. $-2 < p_T < 25$ (GeV/c)

II. quality == 31 or 63

III. n1 > 0

IV. $|BBCZ| < 30$ (cm)

V. $|DCZed| < 70$ (cm)

VI. Shower shape (prob) < 0.01

VII. $0.2 < emce/p < 0.8$

VIII. Warnmap Cut

IX. $pc3dphi > -1000$ && $pc3dz > -1000$

X. sect > -1000

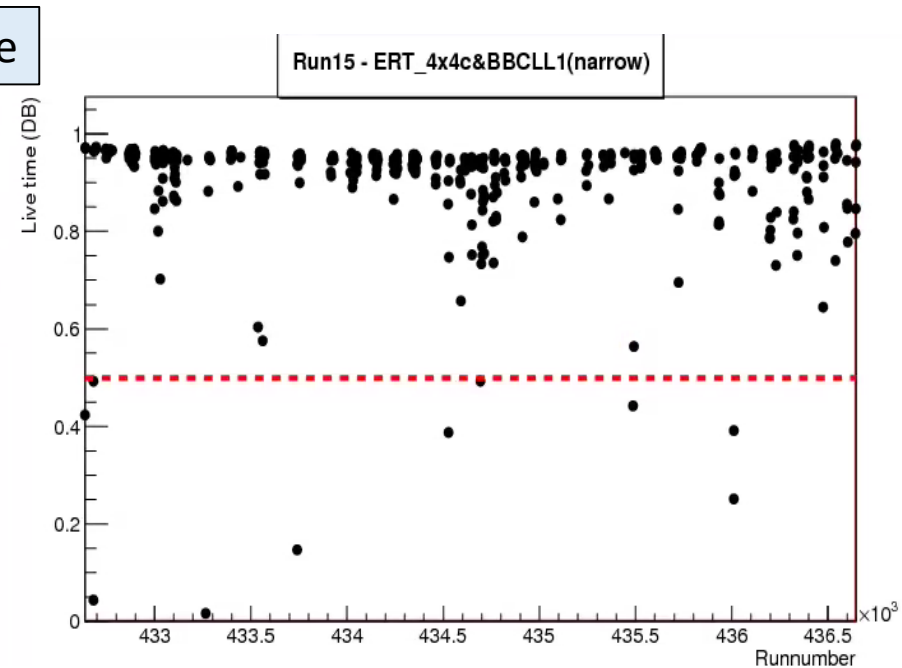
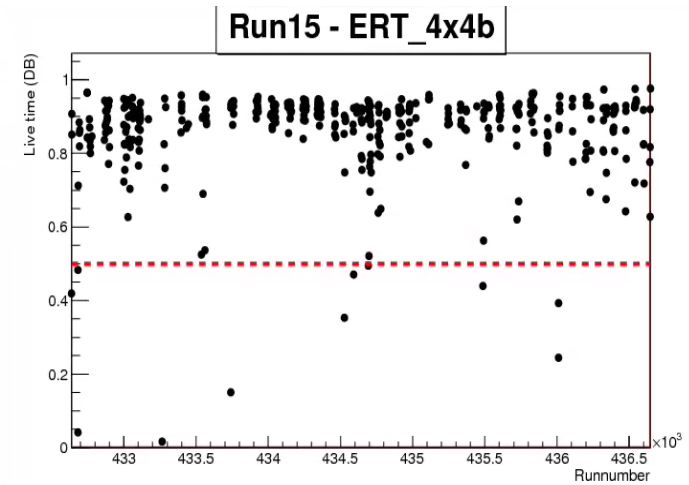
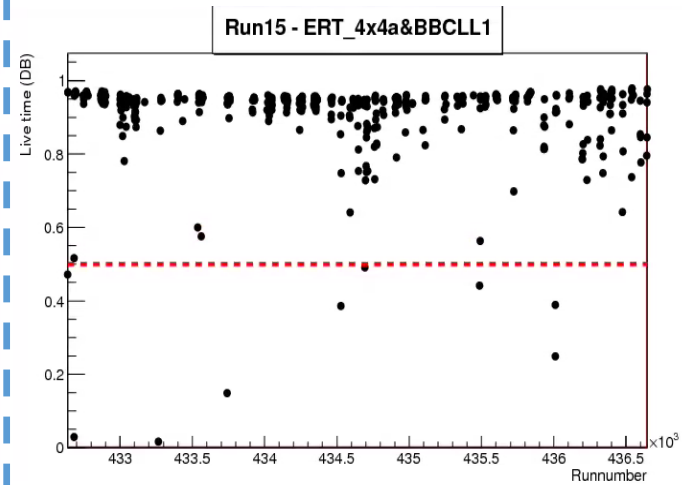
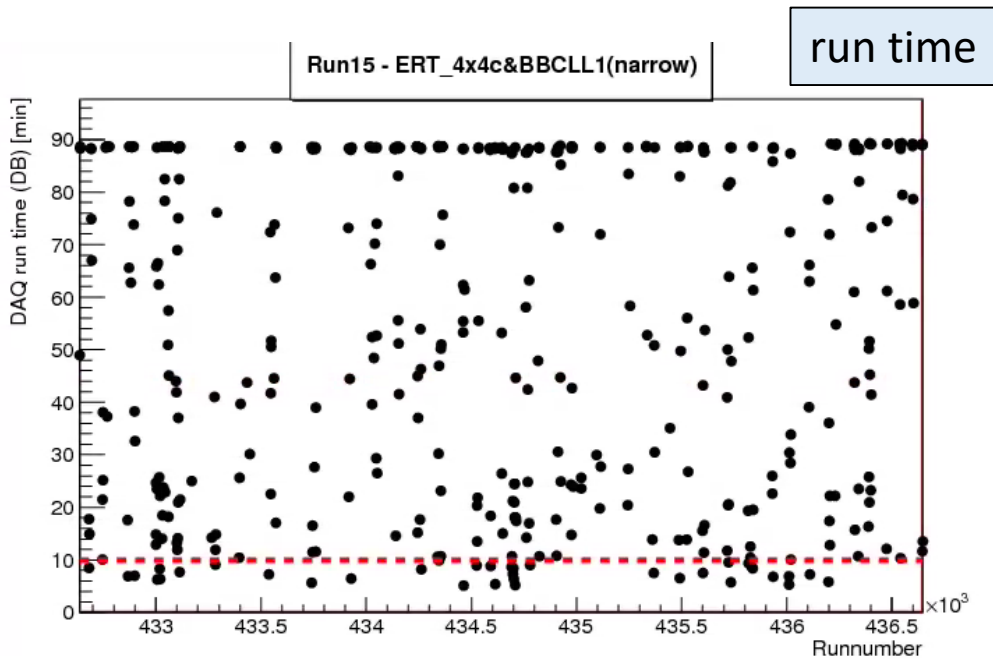
Runlist by ERT dataset

- Datasets: Run15pAu200CAERTPro108
- 330 runs survive in Analysis Train by using ERT dataset.

432639	432640	432684	432691	432692	432693	432694	432745	432746	432747	432762	432766	432767	432768	432780	432866	432872
432766	432767	432768	432780	432866	432872	432873	432874	432875	432881	432883	432884	432885	432886	432894	432895	432898
432884	432885	432886	432894	432895	432898	432899	432999	433000	433001	433003	433004	433005	433007	433009	433014	433015
433004	433005	433007	433009	433014	433015	433017	433019	433020	433028	433030	433031	433032	433036	433042	433043	433044
433031	433032	433036	433042	433043	433044	433058	433059	433060	433061	433063	433065	433096	433097	433100	433101	433102
433065	433096	433097	433100	433101	433102	433103	433104	433105	433106	433107	433110	433111	433112	433113	433114	433116
433110	433111	433112	433113	433114	433116	433171	433283	433284	433285	433290	433396	433397	433538	433543	433546	433547
433396	433397	433538	433543	433546	433547	433548	433549	433562	433564	433567	433568	433570	433571	433572	433573	433741
433568	433570	433571	433572	433573	433741	433743	433744	433745	433746	433754	433756	433758	433759	433760	433761	433915
433756	433758	433759	433760	433761	433915	433917	433918	433921	433926	433927	433928	433929	433930	434017	434021	434024
433928	433929	433930	434017	434021	434024	434027	434028	434037	434040	434046	434048	434049	434050	434051	434052	434134
434048	434049	434050	434051	434052	434134	434137	434138	434139	434140	434152	434153	434154	434156	434157	434160	434241
434153	434154	434156	434157	434160	434241	434242	434243	434244	434245	434246	434256	434257	434258	434259	434260	434261
434256	434257	434258	434259	434260	434261	434262	434341	434343	434344	434345	434346	434347	434351	434352	434353	434354
434346	434347	434351	434352	434353	434354	434355	434356	434357	434358	434360	434362	434363	434364	434459	434460	434461
434362	434363	434364	434459	434460	434461	434462	434463	434464	434467	434526	434527	434528	434529	434533	434534	434587
434527	434528	434529	434533	434534	434587	434590	434591	434592	434612	434613	434614	434615	434644	434645	434646	434647
434614	434615	434644	434645	434646	434647	434648	434649	434650	434689	434690	434692	434693	434694	434697	434698	434700
434692	434693	434694	434697	434698	434700	434701	434703	434704	434705	434706	434707	434708	434709	434710	434711	434712
434707	434708	434709	434710	434711	434712	434759	434760	434761	434762	434765	434767	434768	434769	434773	434774	434775
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435244	435245	435246	435247	435254	435331	435332	435335	435337	435361	435368	435370	435371	435372	435444	435487	435490
435370	435371	435372	435444	435487	435490	435492	435493	435494	435495	435525	435526	435527	435528	435529	435530	435600
435526	435527	435528	435529	435530	435600	435601	435602	435603	435604	435606	435608	435609	435716	435717	435719	435720
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435732	435735	435736	435737	435817	435818	435819	435826	435828	435832	435836	435841	435930	435931	435933	435934	435935
435841	435930	435931	435933	435934	435935	435936	435938	436013	436016	436017						

Run QA at daq in Database

- Trigger
 - ERTLL1_4x4a&BBCLL1
 - ERT_4x4b
 - ERT_4x4c&BBCLL1(narrow)
- Cut
 - DAQ Run time > 10 min
 - DAQ live time > 0.5



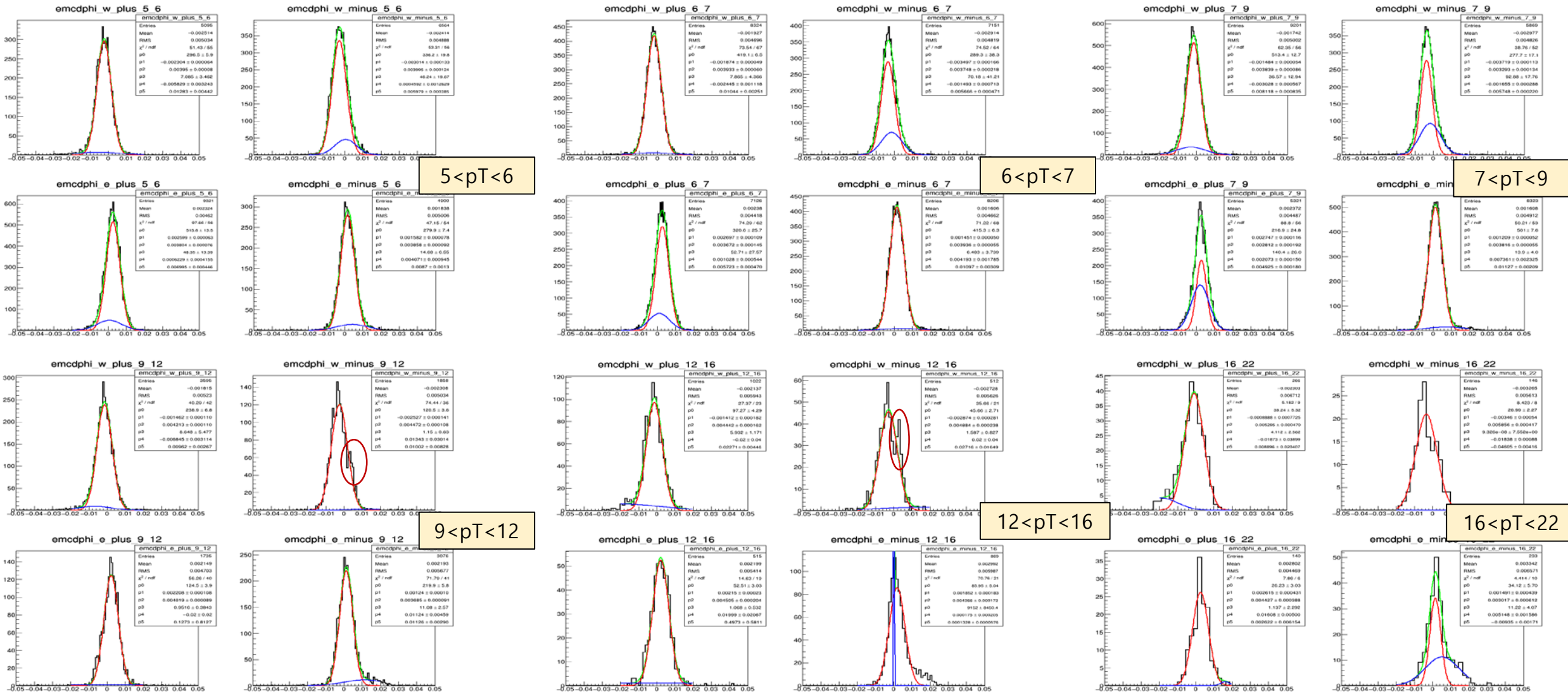
Run QA at daq in Database

- **Good run**

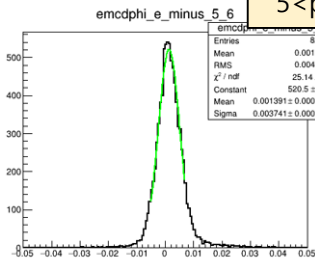
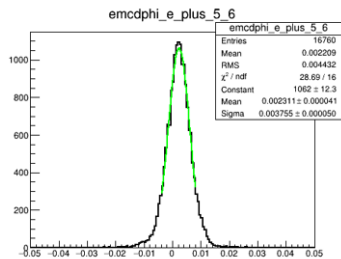
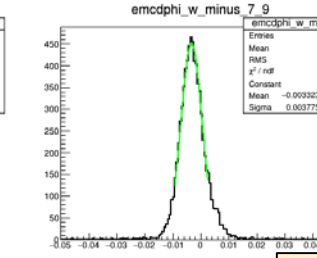
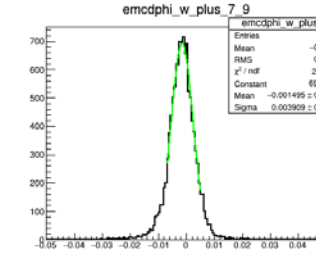
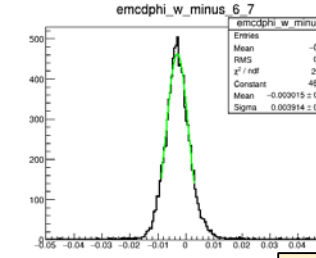
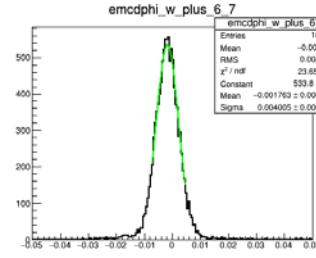
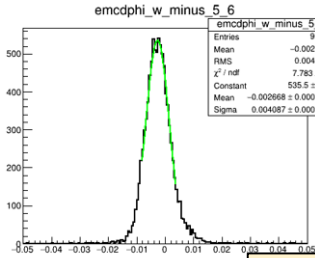
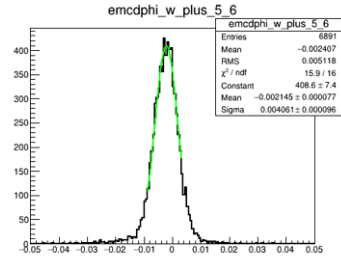
- 37 runs are rejected from 330 runs by Run QA from DAQ.
- 293 runs are passed Run QA from DAQ in the DB.

432639	432640	432684	432691	432692	432693	432694	432745	432746	432747	432762	432766	432767	432768	432780	432866	432872
432766	432767	432768	432780	432866	432872	432873	432874	432875	432881	432883	432884	432885	432886	432894	432895	432898
432884	432885	432886	432894	432895	432898	432999	433000	433001	433003	433004	433005	433009	433014	433015	433020	433028
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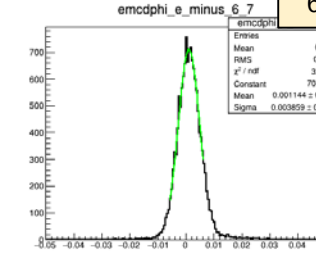
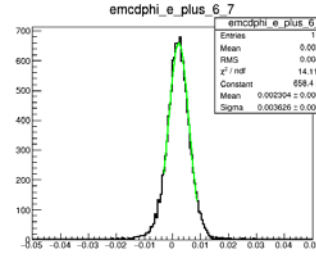
EMCal_dφ (Run15pAu200CAERTPro108)



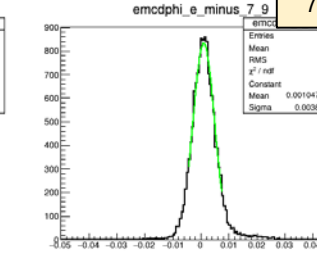
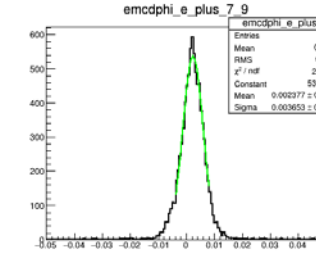
EMCa_dφ (Run 15 pAu 200C An0 VT XERT Pro 104)



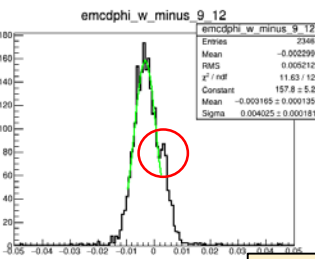
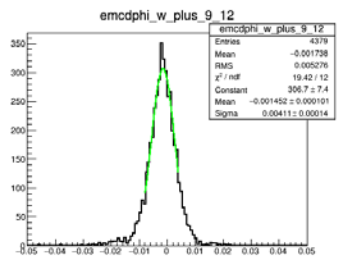
5 < pT < 6



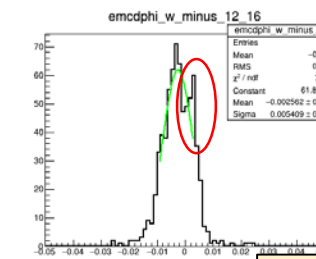
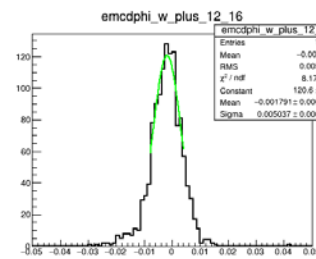
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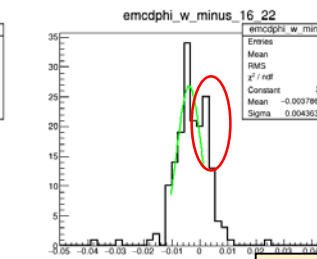
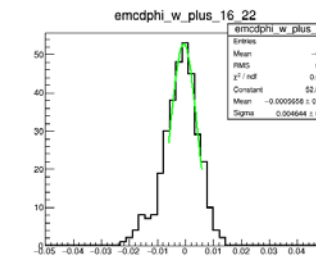
7 < pT < 9



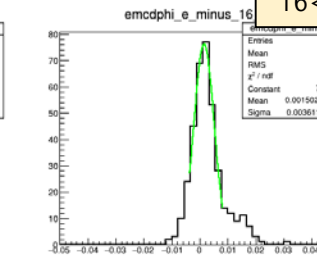
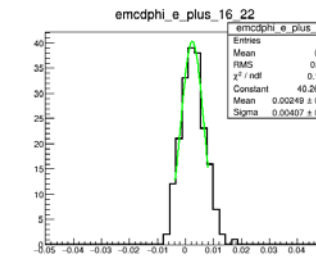
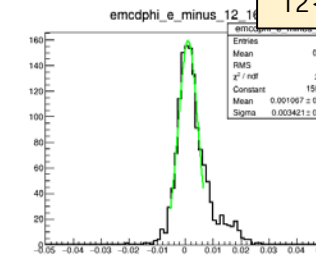
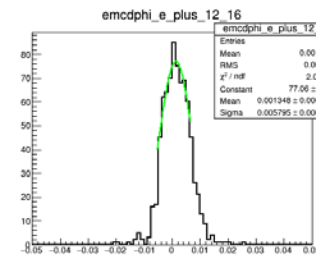
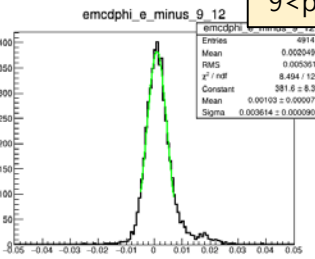
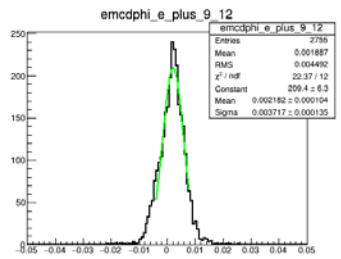
9 < pT < 12



12 < pT < 16



16 < pT < 22



Sunnary & Plan

- The production that is on the taxi and that should have the latest alignment and calibrations is **pro.108** .

->Second peaks are a slight suppression but it remain.

- I will remove ambiguous tracks close to the anode wires where the track position can not be well determined.

1. Run QA	
2. calibration <ul style="list-style-type: none">- EMCal gain matching (carried norbert)- PC calibration-	
3. Event selection <ul style="list-style-type: none">- Convincing evidences of each cuts.	3.17 ~ 10.31
4. Survival rate true events Background rejection power	11.01 ~ 12.01
4.1 trigger efficiency calculation	11.01 ~ 11.30
4.2 Simulation and recon_eff	12.01 ~ 01.31
5. Luminosity study	02.01 ~ 02.21
6. Cross section as function of p_T compare with π^0	02.22 ~ 04.30
7. A_N spin analysis +-	05.01 ~ 06.30
8. Systematic error	07.01 ~ 07.31
9. Preliminary	08.01

Thank you.