

Charged pion analysis

warmmap for EMCal

Deadmap for DC, PC, RICH

Acc x Rec eff.

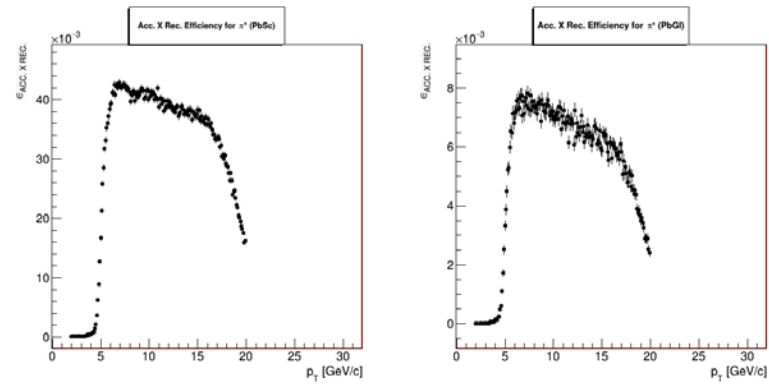
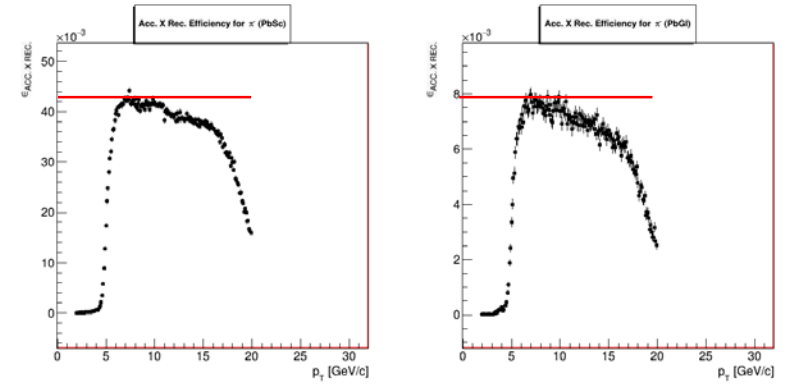
Trigger efficiency

pp , pAl, pAu

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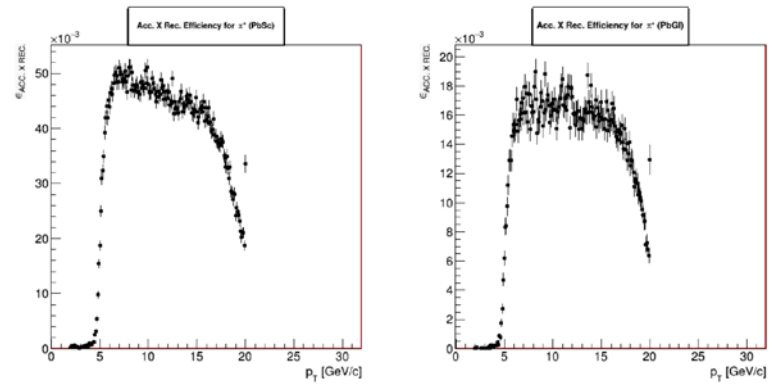
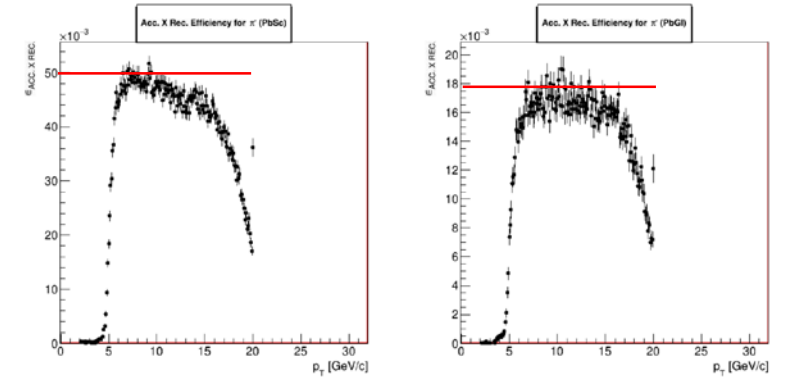
Acc. X Rec. efficiency - pp, pAu, pAl.



pp

- PbSc -42.5

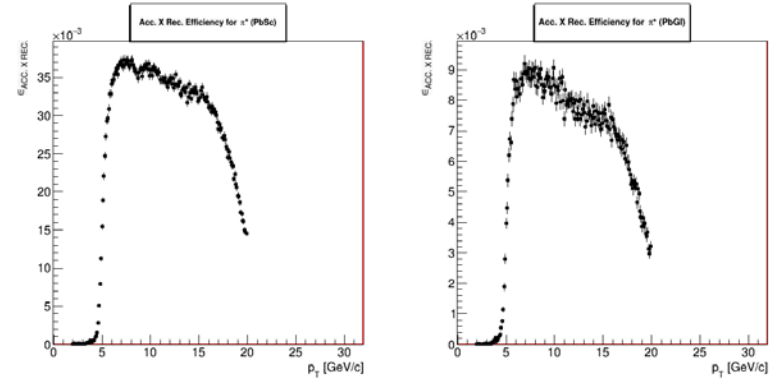
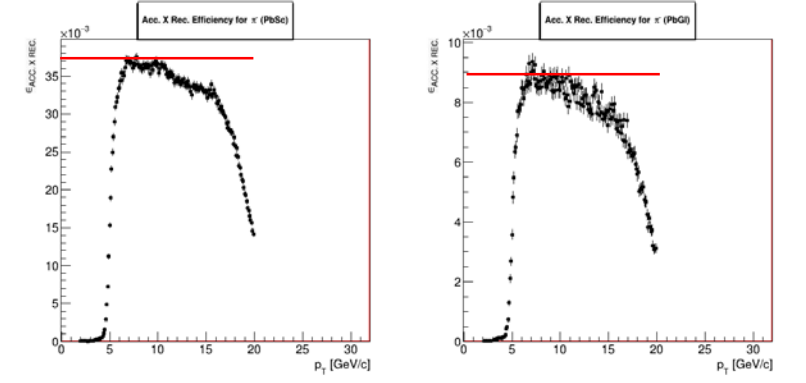
- PbG -7.9



pAu

- PbSc -50

- PbG -17.8

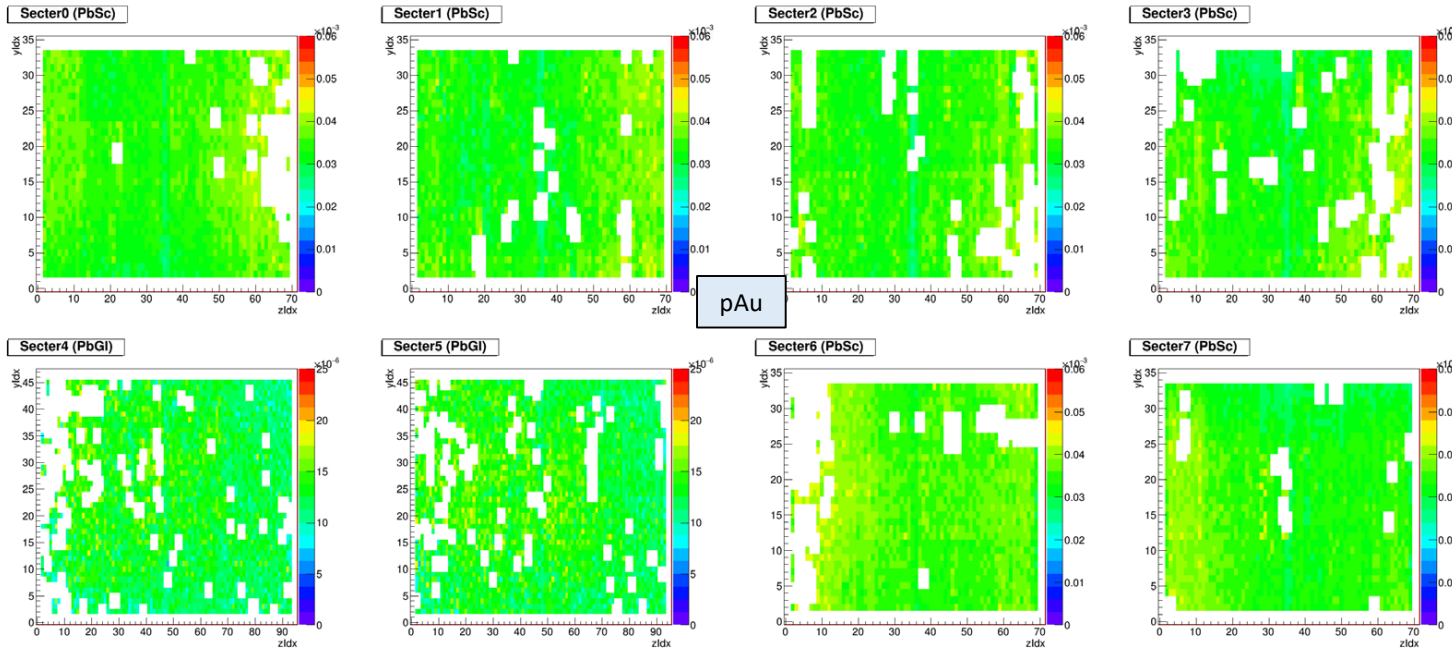


pAl

- PbSc -37.5

- PbG -9

EMCal total number of tower

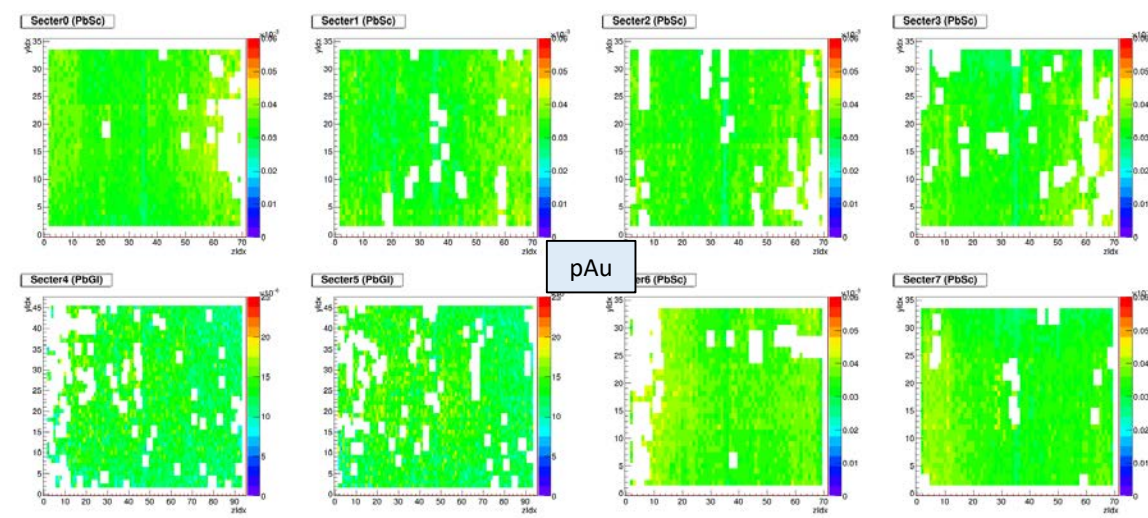
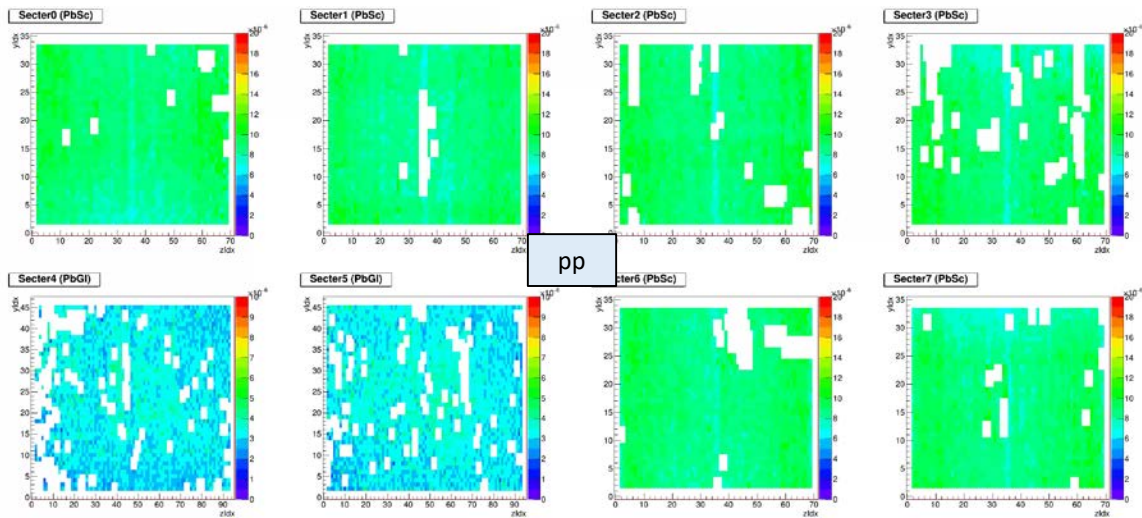


- Total number of tower : 6063
- Number of towers
 - PbGl : 1872
 - PbSc : 4191
- Edge channels :
 - PbGl : 1120
 - PbSc : 2496
- Non-edge channels :
 - PbGl : 752
 - PbSc : 1695

- Total number of tower : 24768
- Number of towers
 - $48(y) \times 96(z) \times 2(\text{PbGl}) = 9216$.
 - $36(y) \times 72(z) \times 6(\text{PbSc}) = 15552$.
- Edge channels : 3616
- Non-edge channels : 21152
 - PbGl : 8096
 - PbSc : 13056

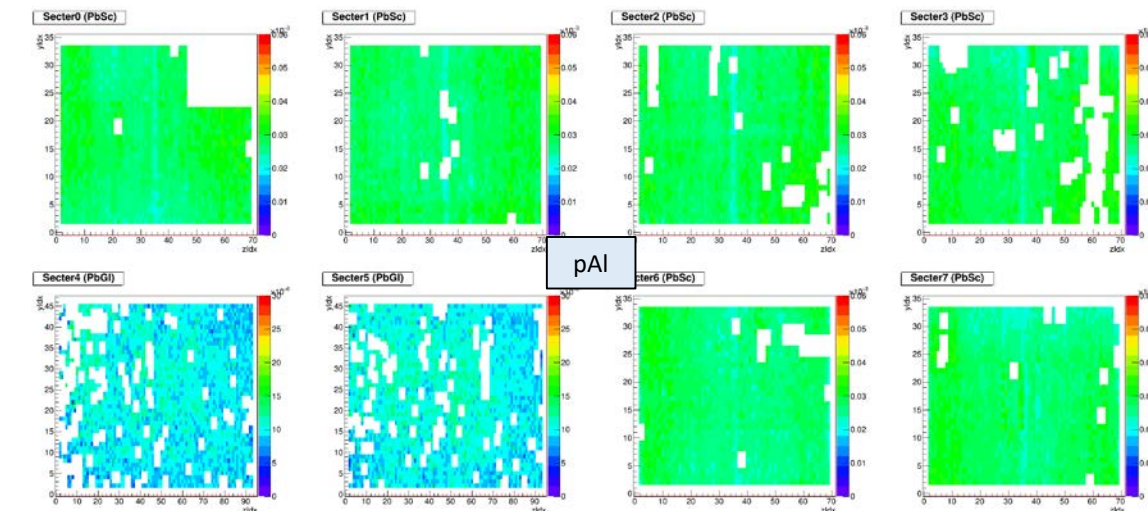
- Hot & Dead rate :
 - (Non-edge)
 - PbGl : 9.29% (Non-edge)
 - PbSc : 13.0%
 - (including edge)
 - PbGl : 20.3% (Non-edge)
 - PbSc : 26.9%

Compare Warnmap with pp, pAu, pAl

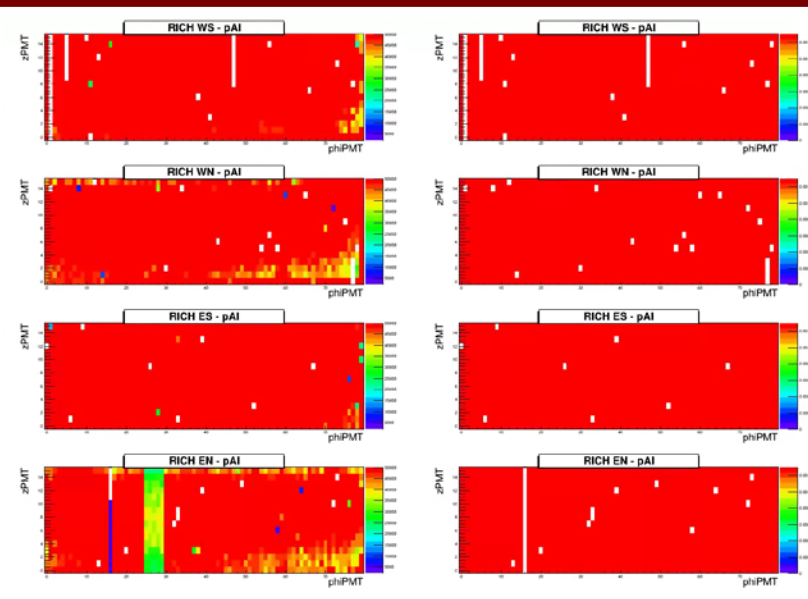
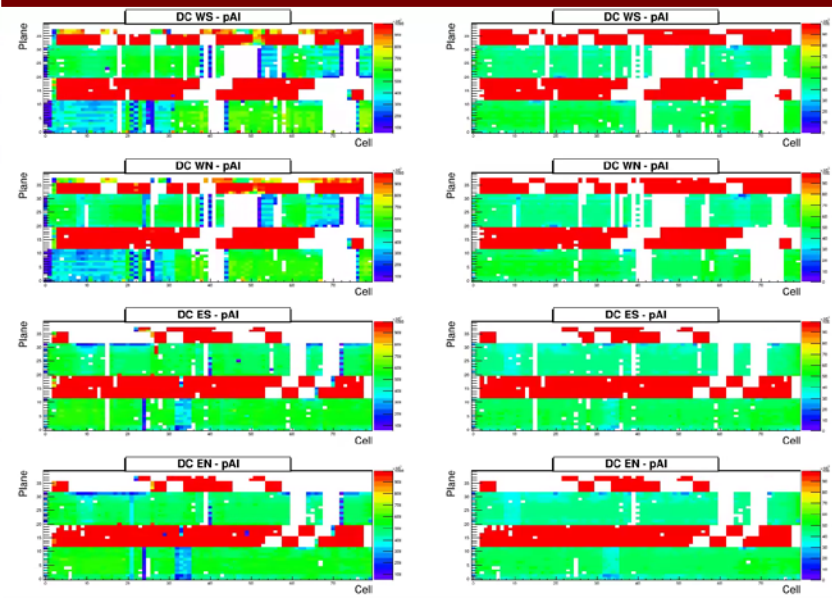


- EMCal- Number of warn channel

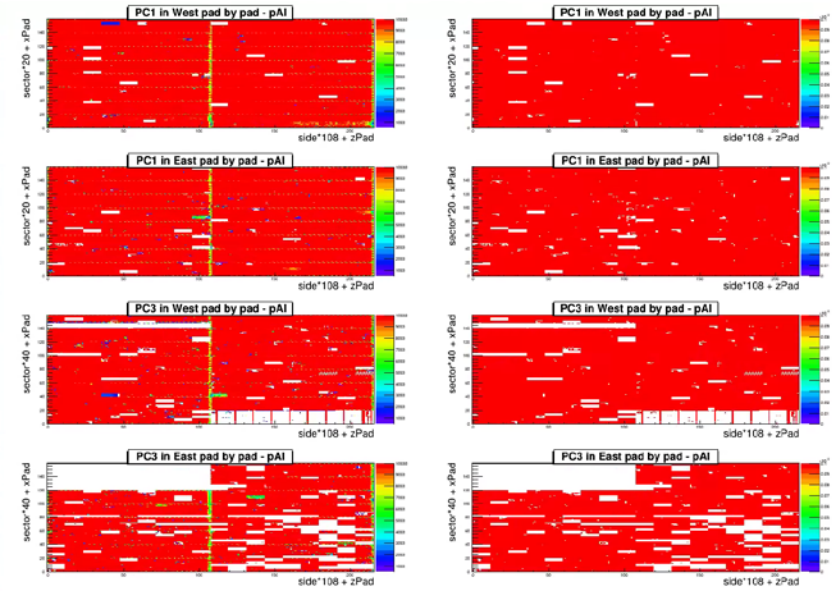
- pAu : 6874
- pp : 6338
- pAl : 6501



DC dead map



- DC - Number of dead channel : 12800
 - pp : 3568
 - pAu : 3509
 - pAl : 3485



- PC - Number of dead channel : 138240
 - pp : 16760
 - pAu : 16647
 - pAl : 15791

- RICH - Number of dead channel : 5120
 - pp : 100
 - pAu : 95
 - pAl : 96

Trigger efficiency for ERT

Run15 pp, pAl, pAu dataset

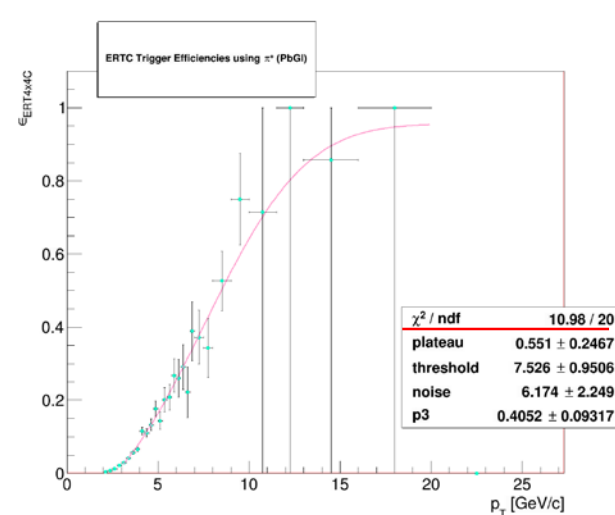
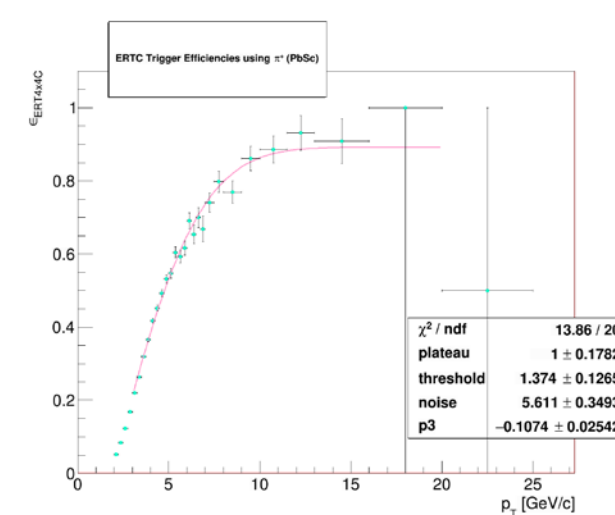
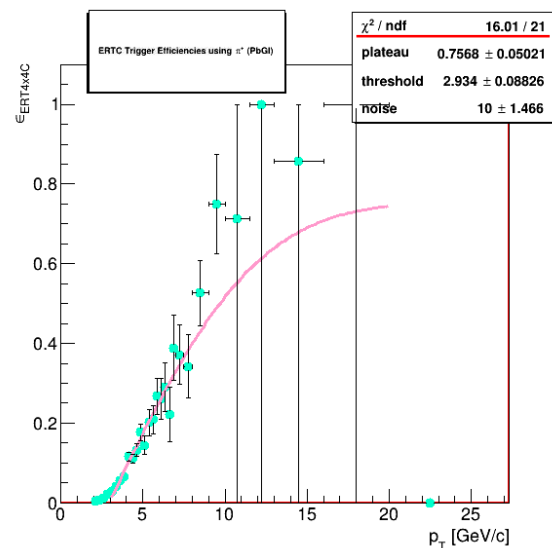
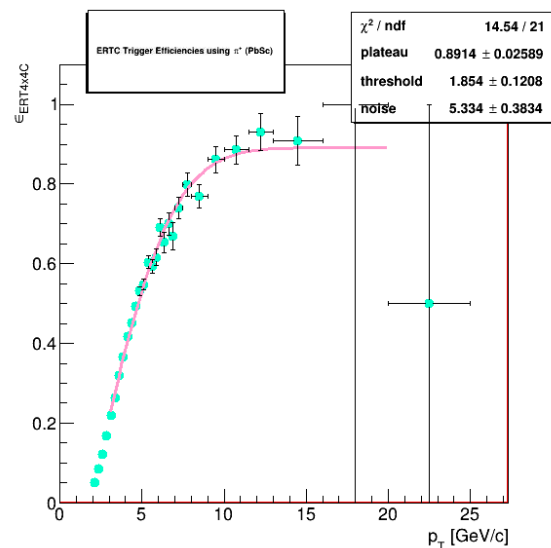
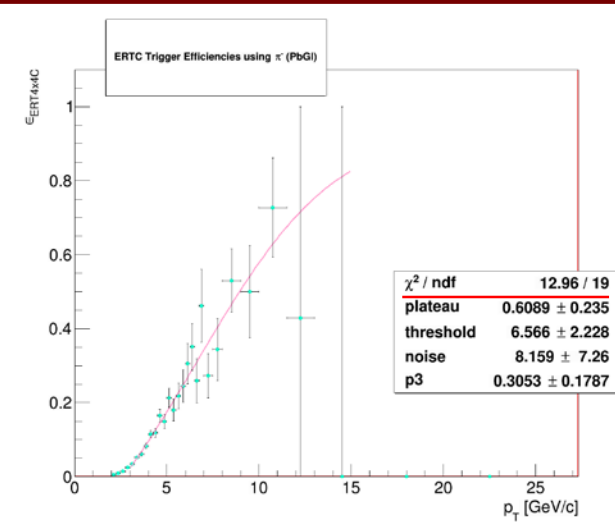
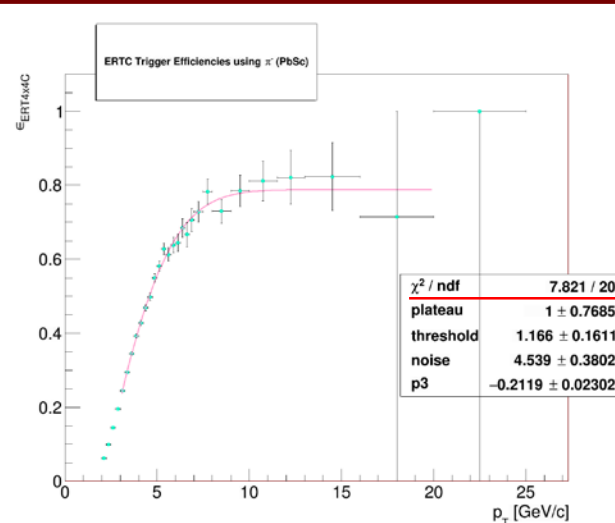
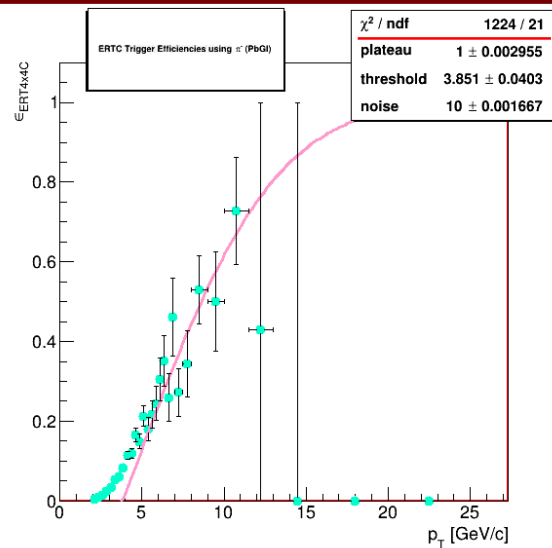
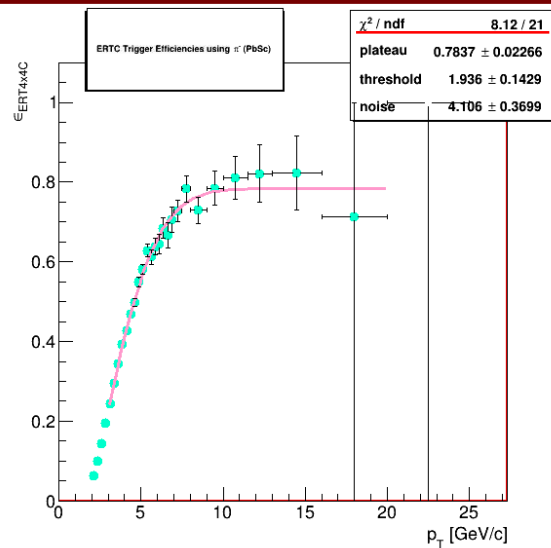
error function

```
305 /* _____ */
306
307 Double_t erf(Double_t *_x, Double_t *_par)
308 {
309
310     Double_t ftn;
311     ftn = _par[0]*TMath::Erf((_x[0]-_par[1])/_par[2]);
312
313     return ftn;
314 } // erf()
315
316
317 /* _____ */
318
```



```
313 /* _____ */
314
315 Double_t erf(Double_t *_x, Double_t *_par)
316 {
317
318     Double_t ftn;
319     ftn = _par[0]*TMath::Erf((_x[0]-_par[1])/_par[2])+_par[3];
320
321     return ftn;
322 } // erf()
323
324
325 /* _____ */
326
```

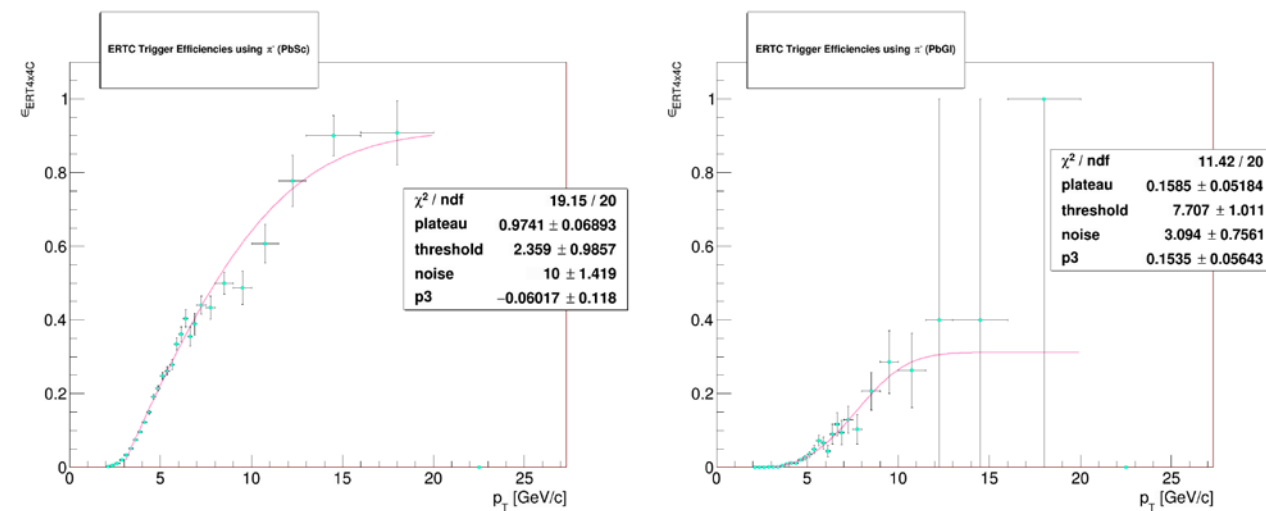
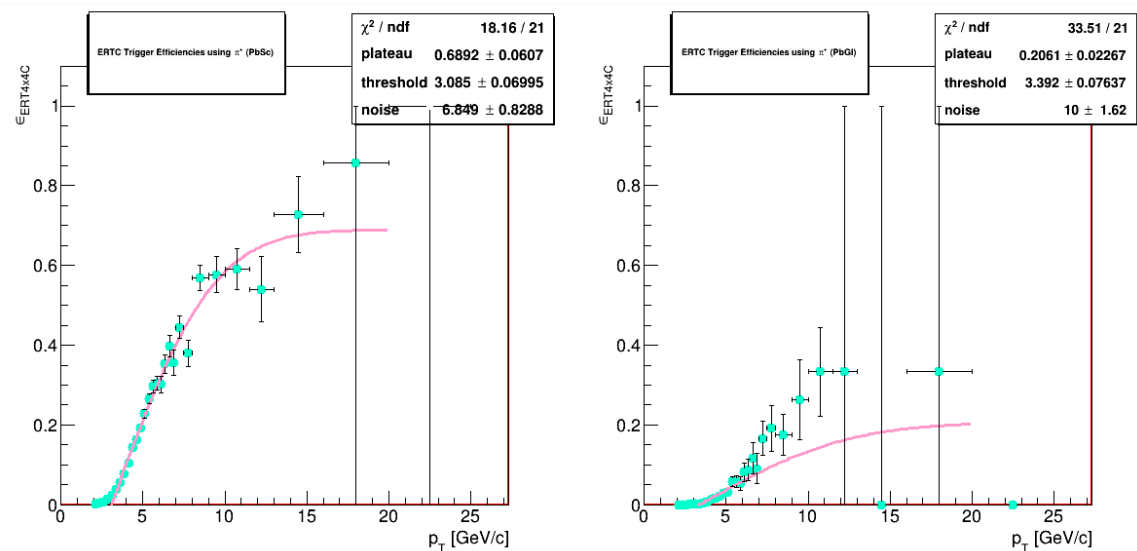
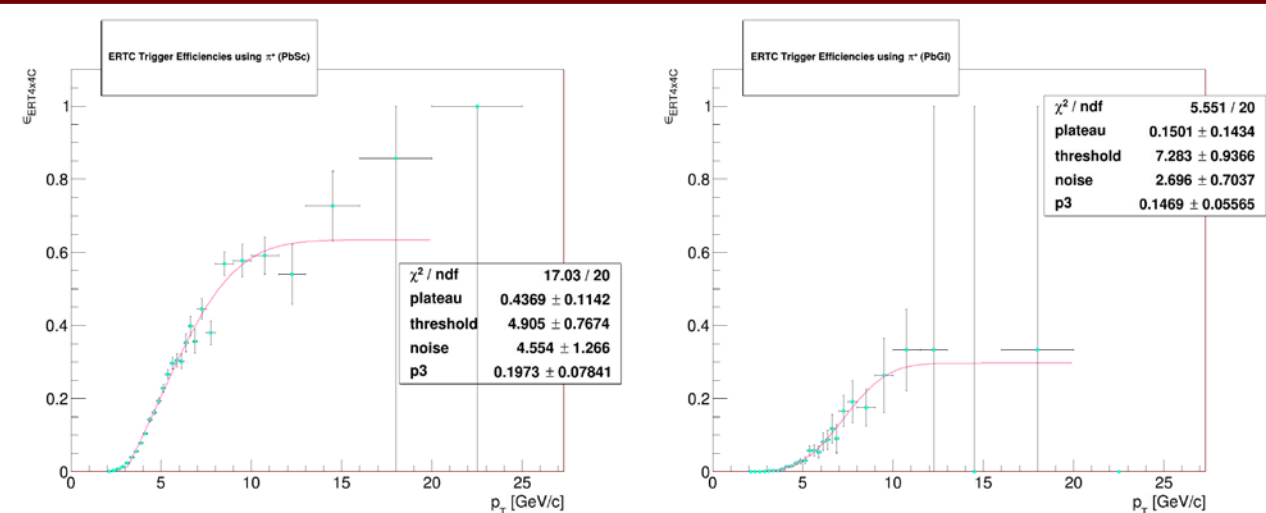
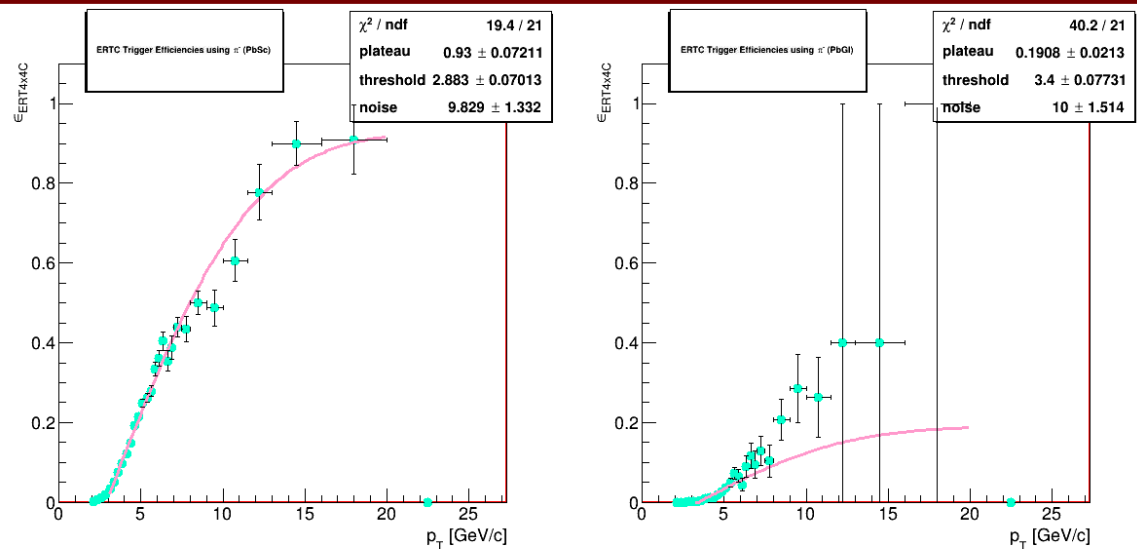
ERT Trigger Efficiency with all dataset (pp)



MB+MU + MPC+FVTX+OT

Comparison

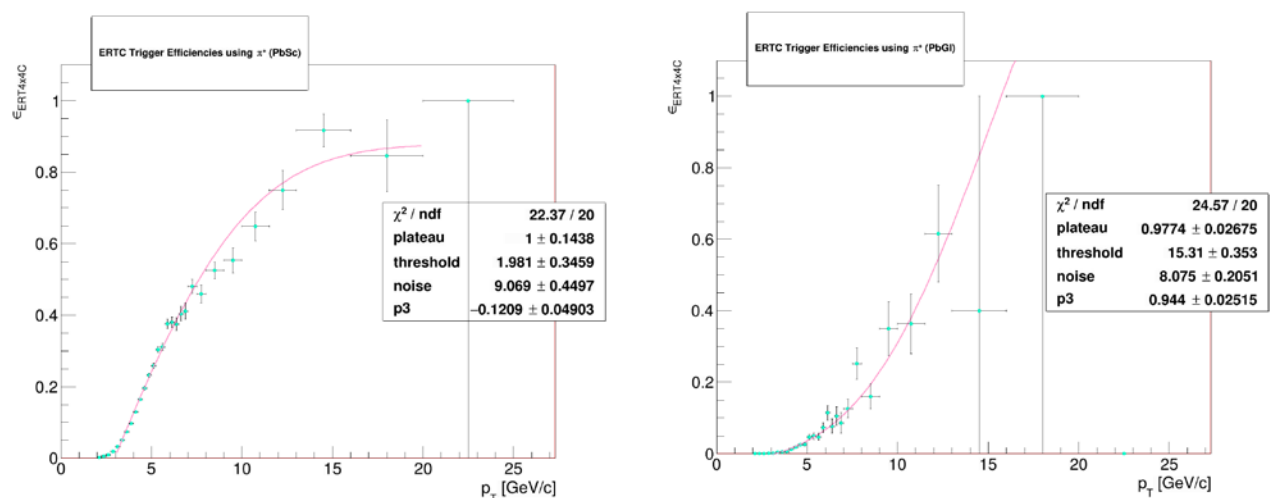
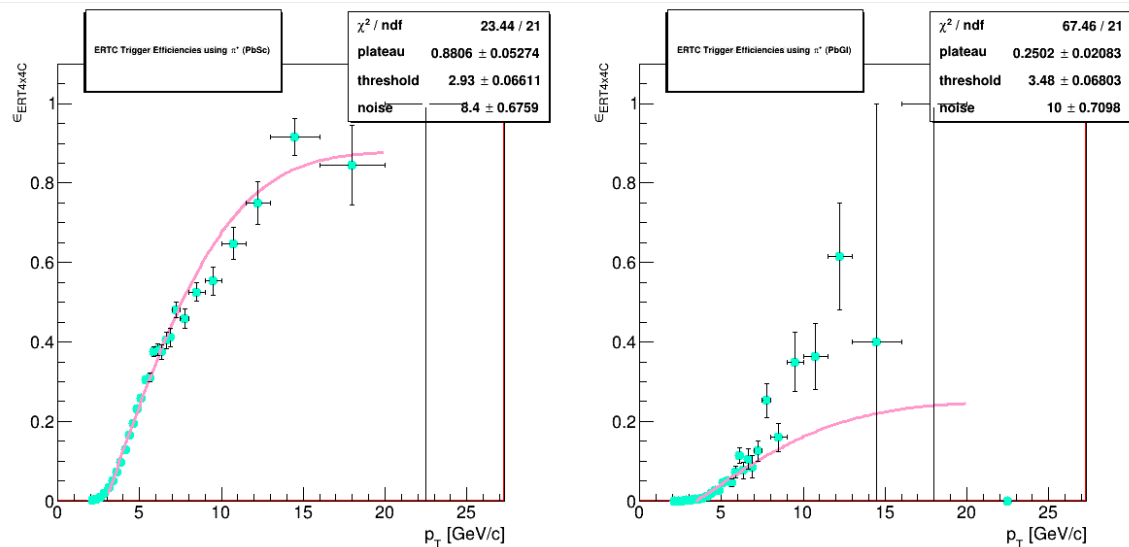
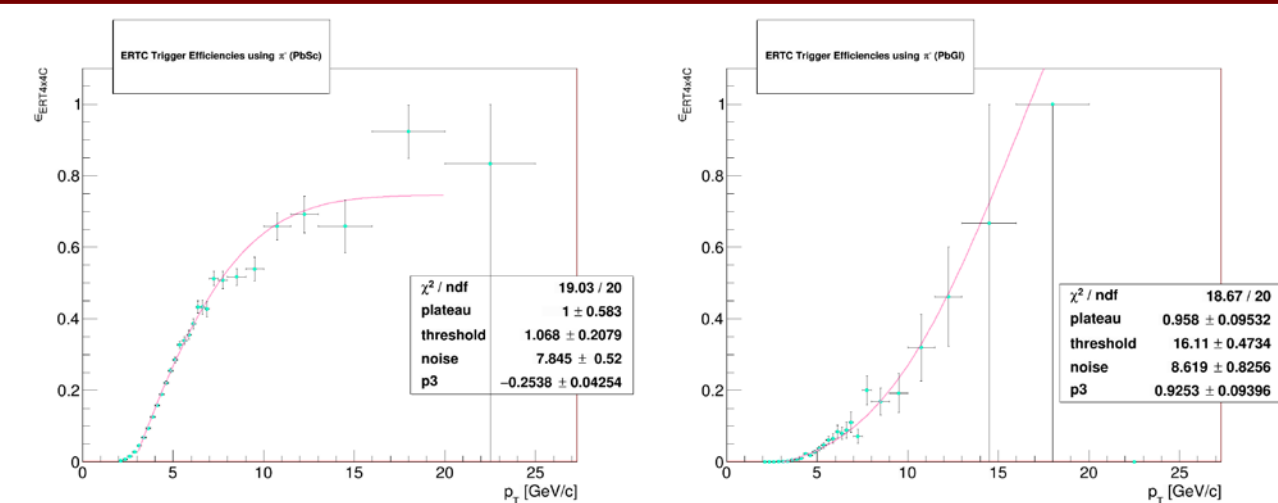
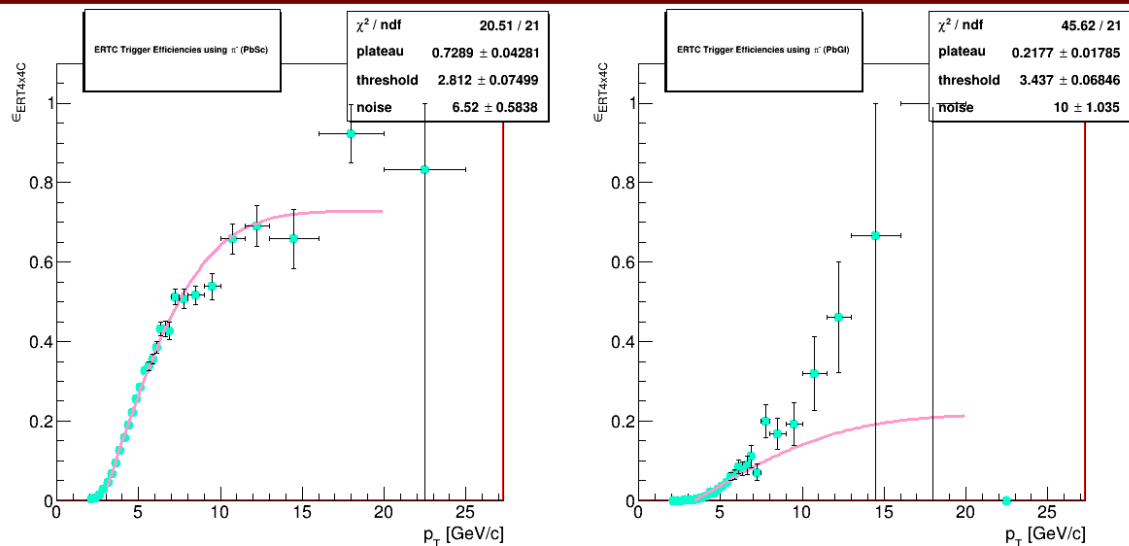
ERT Trigger Efficiency with all dataset (pAl)



MB+MU+FVTX+OT

Comparison

ERT Trigger Efficiency with all dataset (pAu)



MB+MU + MPC+FVTX+OT

Comparison

Plan

- I will study what makes the difference of Acc X Rec eff. between pp, pAu, pAl dataset.
 - cut study
- Luminosity study
- Cross section study

Thank you.

BackUp

RunQA from Database

Run15 pp, pAl, pAu dataset

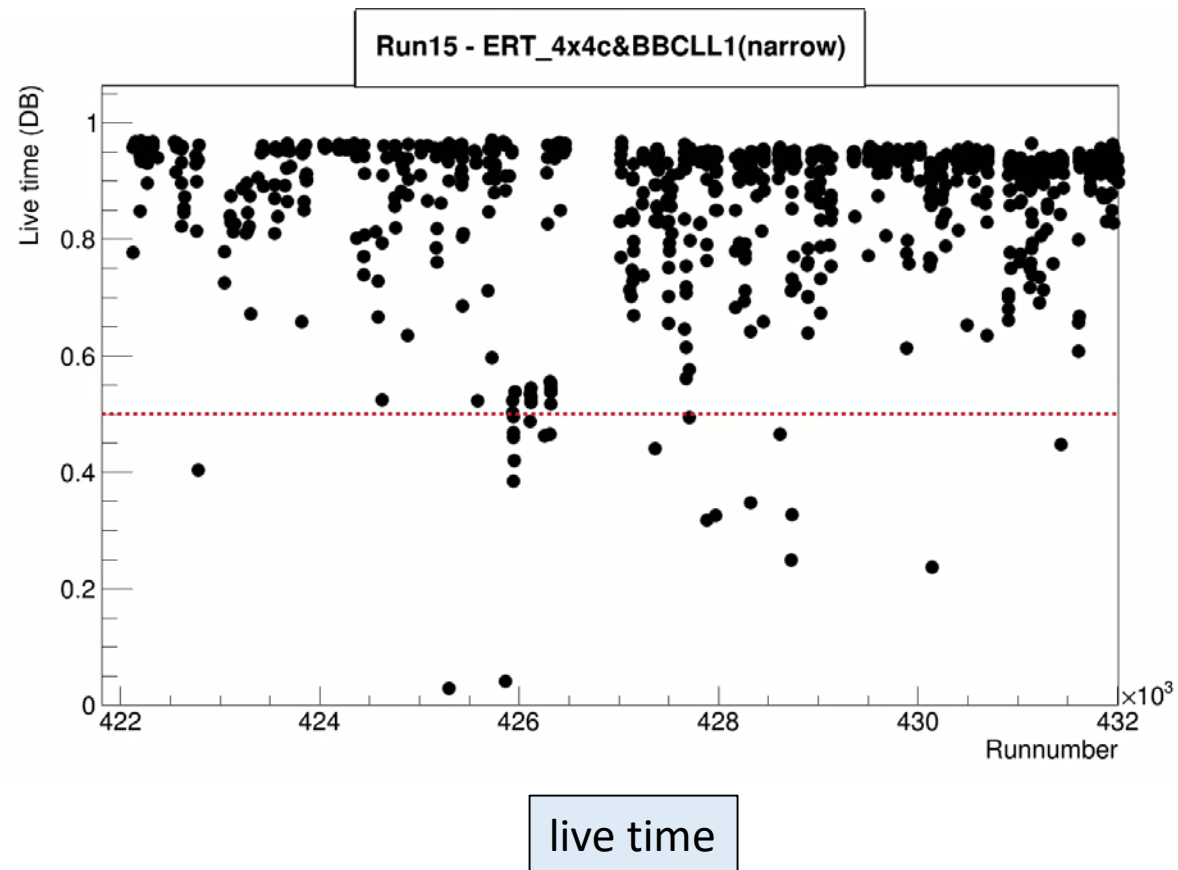
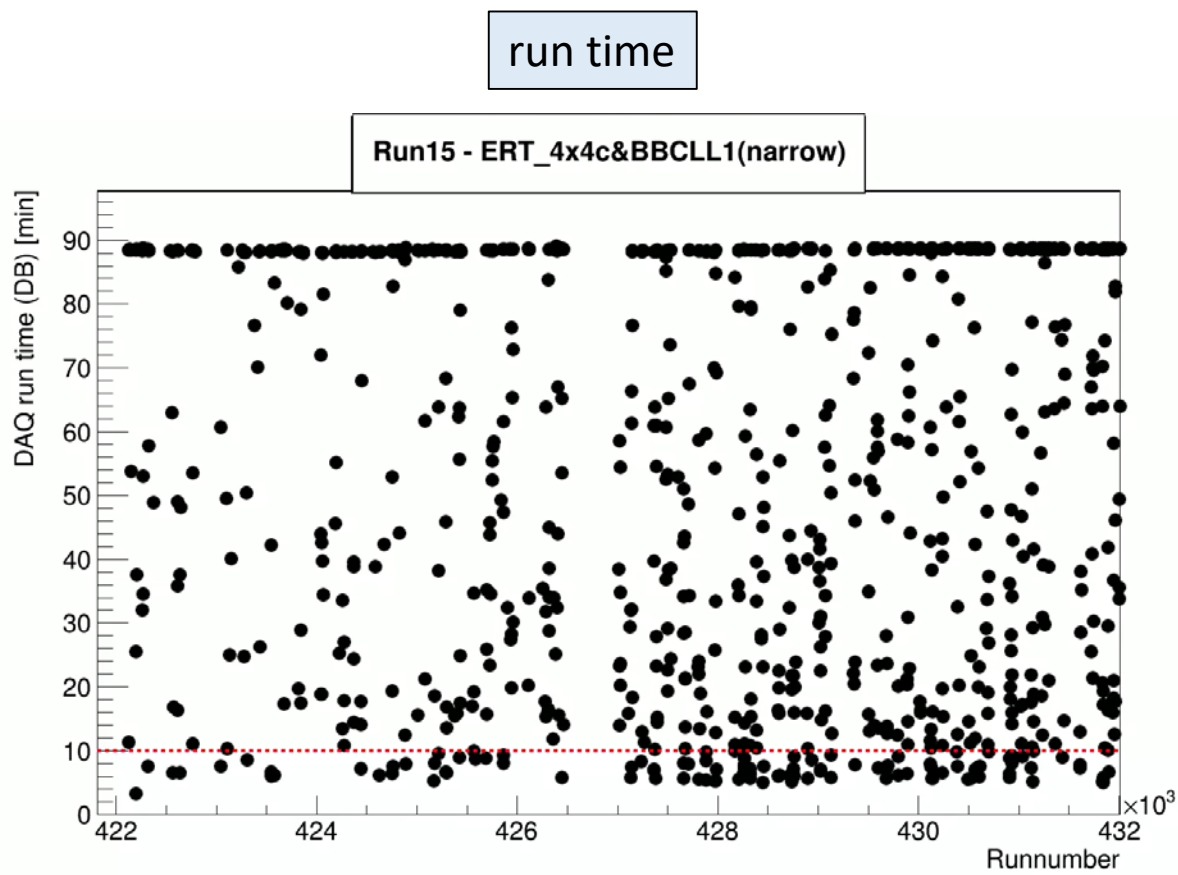
Runlist by ERT dataset (pp)

- Datasets: Run15pp200CAERTP108
- 844 runs survive in Analysis Train by using ERT dataset.

421815	421816	421949	421961	421968	421969	421975	421976	421988	421989	421999	422014	422018	422020	422040	422041	422043	422045	422050	422051	422053	422054
422055	422057	422064	422066	422067	422068	422070	422074	422075	422084	422085	422123	422124	422135	422141	422147	422148	422200	422201	422202	422203	422205
422255	422256	422260	422262	422263	422266	422267	422268	422269	422272	422273	422298	422305	422314	422319	422322	422323	422324	422531	422540	422543	422553
422562	422566	422575	422611	422613	422614	422615	422618	422633	422640	422643	422756	422758	422762	422763	422779	422782	422785	423041	423043	423101	423109
423110	423132	423149	423220	423263	423268	423275	423278	423290	423301	423311	423377	423424	423432	423433	423546	423547	423548	423549	423550	423553	423576
423579	423632	423652	423663	423664	423676	423677	423679	423685	423696	423703	423820	423826	423828	423839	423843	423844	423845	423856	423860	423865	423867
423868	424038	424039	424040	424051	424052	424053	424055	424060	424061	424062	424063	424189	424190	424193	424194	424195	424227	424255	424257	424270	424272
424273	424275	424276	424348	424353	424356	424358	424365	424368	424371	424372	424439	424440	424441	424443	424444	424445	424452	424557	424584	424585	424626
424627	424629	424644	424671	424751	424754	424755	424756	424759	424760	424761	424763	424817	424827	424836	424877	424880	424881	424885	424886	425006	425008
425011	425016	425078	425079	425080	425152	425168	425171	425172	425173	425212	425213	425214	425215	425286	425287	425288	425289	425290	425292	425293	425294
425295	425296	425377	425378	425395	425397	425403	425409	425412	425413	425420	425422	425423	425424	425425	425428	425429	425431	425433	425434	425439	425553
425564	425566	425583	425688	425691	425692	425693	425694	426112	426113	426114	426115	426116	426117	426252	426273	426281	426282	426283	426307	426308	426313
426315	426316	426319	426320	426353	426365	426366	426378	426383	426391	426394	426397	426401	426406	426407	426408	426409	426442	426443	426444	426445	426450
426460	426461	427013	427019	427020	427021	427024	427025	427026	427027	427111	427129	427135	427136	427137	427141	427144	427145	427146	427147	427148	427149
427233	427239	427241	427243	427244	427262	427264	427360	427361	427362	427363	427366	427367	427373	427377	427380	427383	427384	427385	427388	427389	427390
427391	427393	427394	427397	427398	427481	427482	427483	427484	427485	427486	427498	427499	427500	427502	427508	427510	427511	427514	427523	427527	427530
427605	427654	427656	427657	427658	427660	427661	427662	427670	427671	427672	427673	427674	427708	427709	427710	427711	427712	427713	427805	427806	427807
427810	427811	427813	427814	427815	427829	427878	427879	427881	427882	427883	427885	427886	427887	427963	427964	427965	427968	427970	427974	427975	427977
427979	427980	427982	427984	428166	428168	428169	428171	428204	428206	428207	428208	428211	428212	428255	428256	428260	428261	428262	428263	428264	428265
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429014	429016	429017	429022	429023	429024	429025	429026	429027	429029	429062	429066	429067	429068	429069	429070	429071	429112	429114	429115	429126	429127
429128	429129	429132	429133	429351	429352	429353	429355	429359	429361	429364	429365	429366	429368	429370	429503	429504	429505	429506	429512	429518	429519
429549	429551	429552	429554	429555	429556	429589	429590	429591	429592	429593	429594	429595	429596	429676	429678	429679	429680	429685	429686	429687	429688
429689	429691	429696	429787	429789	429795	429796	429797	429798	429799	429800	429801	429802	429886	429887	429888	429889	429890	429893	429894	429895	429896
429905	429906	429909	429910	429911	429912	429915	430013	430014	430017	430018	430022	430023	430024	430116	430117	430119	430120	430121	430123	430124	430125
430128	430131	430133	430134	430136	430141	430142	430143	430234	430235	430236	430237	430238	430239	430240	430241	430242	430277	430278	430279	430280	430281
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430524	430525	430557	430558	430560	430562	430563	430565	430566	430594	430595	430596	430598	430599	430600	430607	430608	430676	430679	430680	430681	430682
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431123	431125	431126	431127	431130	431131	431134	431135	431136	431137	431138	431139	431142	431143	431144	431145	431146	431147	431148	431149	431216	431217
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431358	431360	431361	431362	431428	431429	431430	431432	431437	431447	431448	431453	431454	431458	431608	431609	431612	431615	431616	431618	431619	431620
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431840	431844	431845	431846	431854	431859	431860	431886	431888	431889	431891	431892	431893	431894	431932	431937	431938	431939	431940	431941	431942	431943
431948	431951	431960	431963	431997	432001	432007	432008														

Run QA at daq in Database (pp)

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



Run QA at daq in Database (pp)

- **Good run**

- 168 runs are rejected from 844 runs by Run QA from DAQ.
- 676 runs are passed Run QA from DAQ in the DB.

422123	422124	422135	422141	422147	422148	422200	422201	422202	422203	422205	422255	422256	422260	422262	422263	422266	422267	422268	422269	422272	422273
422298	422305	422314	422322	422323	422324	422543	422553	422566	422575	422611	422613	422614	422615	422618	422633	422643	422756	422758	422762	422763	422782
422785	423043	423101	423109	423110	423132	423149	423220	423263	423268	423275	423278	423290	423301	423377	423424	423432	423433	423547	423548	423550	423553
423579	423632	423652	423663	423664	423676	423677	423679	423685	423696	423703	423820	423826	423828	423839	423843	423844	423845	423856	423860	423865	423867
423868	424038	424039	424040	424051	424052	424053	424055	424060	424061	424062	424063	424189	424190	424193	424194	424195	424227	424255	424257	424270	424272
424273	424275	424276	424348	424353	424356	424358	424365	424368	424371	424372	424439	424440	424441	424444	424445	424452	424557	424584	424585	424626	424629
424644	424671	424751	424754	424755	424756	424760	424761	424763	424817	424827	424836	424880	424881	424885	425006	425008	425016	425078	425079	425080	425152
425171	425173	425213	425214	425215	425286	425287	425288	425289	425292	425293	425294	425295	425296	425377	425378	425395	425397	425409	425412	425413	425422
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426378	426383	426391	426394	426397	426401	426406	426407	426408	426409	426442	426444	426445	426450	426460	426461	427019	427020	427021	427024	427025	427026
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427805	427806	427807	427811	427813	427814	427815	427829	427878	427879	427885	427886	427887	427963	427964	427965	427970	427974	427975	427977	427980	427984
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428763	428771	428772	428891	428893	428894	428896	428898	428929	428930	428931	428933	429007	429010	429014	429016	429017	429023	429025	429026	429027	429029
429062	429066	429067	429068	429069	429070	429071	429112	429114	429115	429126	429128	429132	429133	429351	429352	429353	429355	429359	429361	429364	429366
429368	429370	429504	429505	429506	429512	429518	429519	429549	429551	429552	429554	429555	429556	429589	429590	429591	429592	429593	429594	429596	429676
429679	429685	429686	429687	429688	429689	429691	429787	429789	429796	429797	429799	429800	429801	429802	429886	429887	429889	429890	429893	429894	429895
429896	429905	429906	429909	429910	429911	429912	429915	430013	430014	430016	430017	430022	430023	430024	430116	430117	430120	430123	430124	430125	430128
430131	430133	430134	430141	430142	430143	430234	430235	430236	430237	430238	430240	430241	430242	430277	430278	430279	430280	430281	430389	430390	430393
430402	430406	430407	430408	430409	430414	430415	430496	430497	430500	430501	430502	430519	430520	430521	430524	430525	430557	430558	430560	430562	430565
430566	430595	430596	430598	430599	430676	430679	430680	430681	430682	430683	430692	430693	430696	430697	430699	430700	430702	430909	430911	430912	
430913	430914	430920	430921	430923	430924	430925	430928	430930	430931	430932	430933	430936	431020	431021	431022	431023	431027	431028	431030	431031	431033
431040	431126	431127	431130	431131	431134	431135	431136	431138	431139	431142	431143	431144	431145	431147	431148	431149	431216	431217	431220	431221	431224
431233	431234	431235	431239	431240	431256	431257	431258	431259	431261	431294	431295	431298	431299	431301	431302	431357	431358	431360	431361	431362	431428
431429	431430	431432	431447	431448	431453	431454	431458	431612	431615	431616	431618	431619	431620	431622	431717	431720	431725	431727	431731	431732	431733
431736	431738	431739	431744	431745	431746	431831	431833	431834	431835	431837	431840	431845	431846	431854	431859	431860	431886	431888	431889	431891	431892
431893	431937	431938	431939	431940	431941	431942	431943	431948	431951	431960	431963	431997	432001	432007	432008						

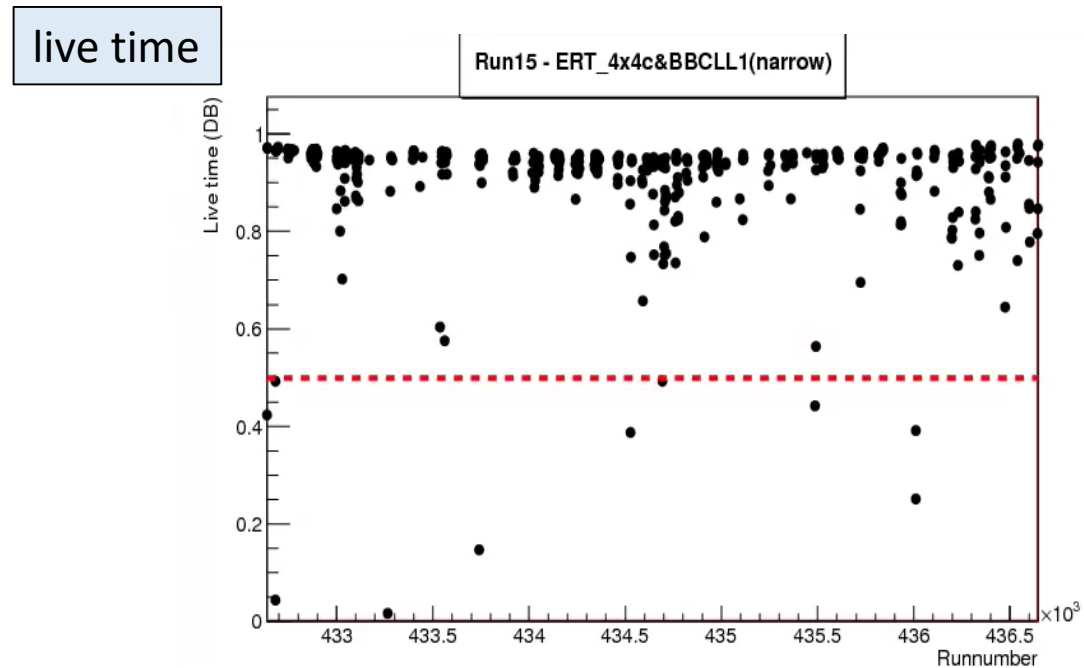
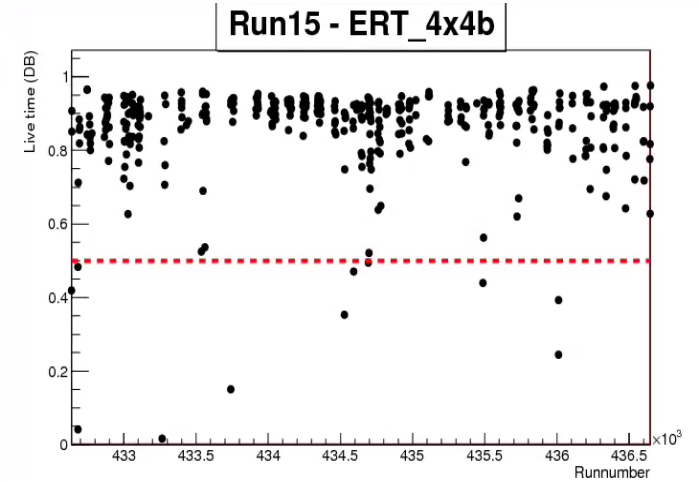
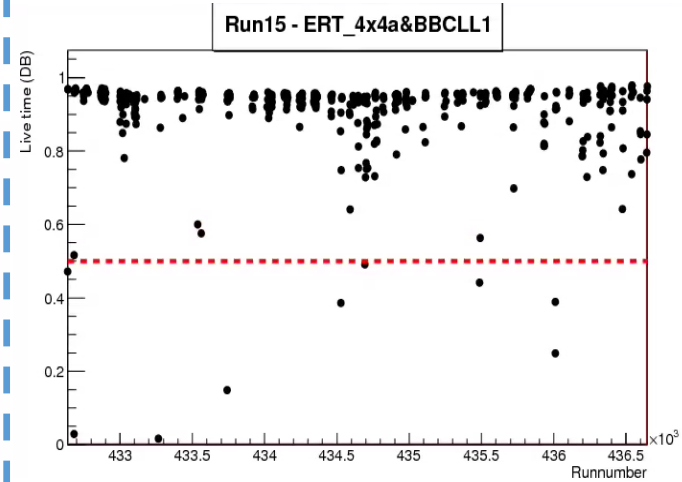
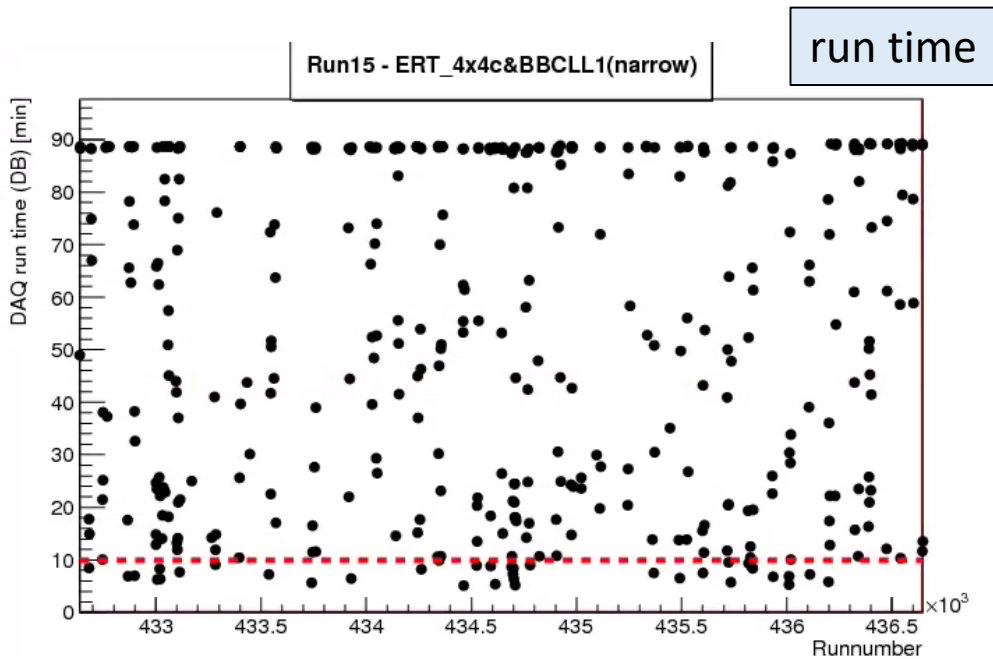
Runlist by ERT dataset (pAu)

- 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	432873	432874	432875	432881	432883
432884	432885	432886	432894	432895	432898	432899	432999	433000	433001	433003
433004	433005	433007	433009	433014	433015	433017	433019	433020	433028	433030
433031	433032	433036	433042	433043	433044	433058	433059	433060	433061	433063
433065	433096	433097	433100	433101	433102	433103	433104	433105	433106	433107
433110	433111	433112	433113	433114	433116	433171	433283	433284	433285	433290
433396	433397	433538	433543	433546	433547	433548	433549	433562	433564	433567
433568	433570	433571	433572	433573	433741	433743	433744	433745	433746	433754
433756	433758	433759	433760	433761	433915	433917	433918	433921	433926	433927
433928	433929	433930	434017	434021	434024	434027	434028	434037	434040	434046
434048	434049	434050	434051	434052	434134	434137	434138	434139	434140	434152
434153	434154	434156	434157	434160	434241	434242	434243	434244	434245	434246
434256	434257	434258	434259	434260	434261	434262	434341	434343	434344	434345
434346	434347	434351	434352	434353	434354	434355	434356	434357	434358	434360
434362	434363	434364	434459	434460	434461	434462	434463	434464	434467	434526
434527	434528	434529	434533	434534	434587	434590	434591	434592	434612	434613
434614	434615	434644	434645	434646	434647	434648	434649	434650	434689	434690
434692	434693	434694	434697	434698	434700	434701	434703	434704	434705	434706
434707	434708	434709	434710	434711	434712	434759	434760	434761	434762	434765
434767	434768	434769	434773	434774	434775	434779	434816	434821	434823	434824
434903	434904	434905	434910	434911	434912	434913	434914	434923	434924	434925
434926	434974	434975	434976	434977	434978	434979	434980	434981	434984	435022
435023	435096	435111	435112	435113	435114	435115	435182	435184	435185	435186
435244	435245	435246	435247	435254	435331	435332	435335	435337	435361	435368
435370	435371	435372	435444	435487	435490	435492	435493	435494	435495	435525
435526	435527	435528	435529	435530	435600	435601	435602	435603	435604	435606
435608	435609	435716	435717	435719	435720	435721	435723	435724	435725	435731
435732	435735	435736	435737	435817	435818	435819	435826	435828	435832	435836
435841	435930	435931	435933	435934	435935	435936	435938	436013	436016	436017

Run QA at daq in Database (pAu)

- 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 (pAu)

- **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	432873	432874	432875	432881	432883
432884	432885	432886	432894	432895	432898	432999	433000	433001	433003	433004
433005	433009	433014	433015	433020	433028	433031	433032	433036	433042	433043
433044	433058	433059	433060	433061	433063	433065	433096	433097	433100	433101
433102	433103	433104	433105	433106	433107	433110	433111	433112	433114	433116
433171	433284	433285	433290	433396	433397	433543	433546	433547	433548	433549
433562	433564	433568	433570	433571	433572	433573	433741	433743	433744	433745
433746	433754	433756	433758	433759	433760	433761	433915	433917	433918	433921
433926	433927	433928	433930	434017	434021	434024	434027	434028	434037	434040
434046	434048	434049	434050	434051	434052	434134	434137	434138	434139	434140
434152	434153	434154	434156	434157	434160	434241	434242	434243	434244	434245
434246	434256	434257	434258	434259	434260	434261	434341	434343	434344	434345
434347	434351	434352	434353	434354	434355	434356	434357	434358	434360	434362
434363	434364	434459	434460	434461	434462	434463	434467	434527	434529	434533
434534	434587	434590	434591	434612	434613	434615	434644	434645	434646	434647
434648	434649	434650	434689	434692	434693	434698	434701	434704	434705	434706
434707	434708	434710	434711	434712	434759	434760	434761	434762	434765	434767
434768	434769	434773	434774	434775	434816	434821	434823	434824	434903	434904
434905	434910	434911	434912	434913	434914	434923	434924	434925	434926	434974
434975	434976	434977	434978	434979	434980	434981	434984	435022	435023	435096
435111	435112	435113	435114	435115	435244	435245	435246	435247	435254	435331
435332	435335	435337	435361	435370	435371	435372	435444	435492	435493	435494
435495	435525	435526	435527	435528	435529	435530	435600	435602	435603	435604
435606	435608	435609	435716	435717	435719	435720	435721	435723	435725	435731
435732	435736	435737	435817	435819	435826	435828	435836	435841	435930	435931
435933	435934	435935	435938	436013	436016	436017				

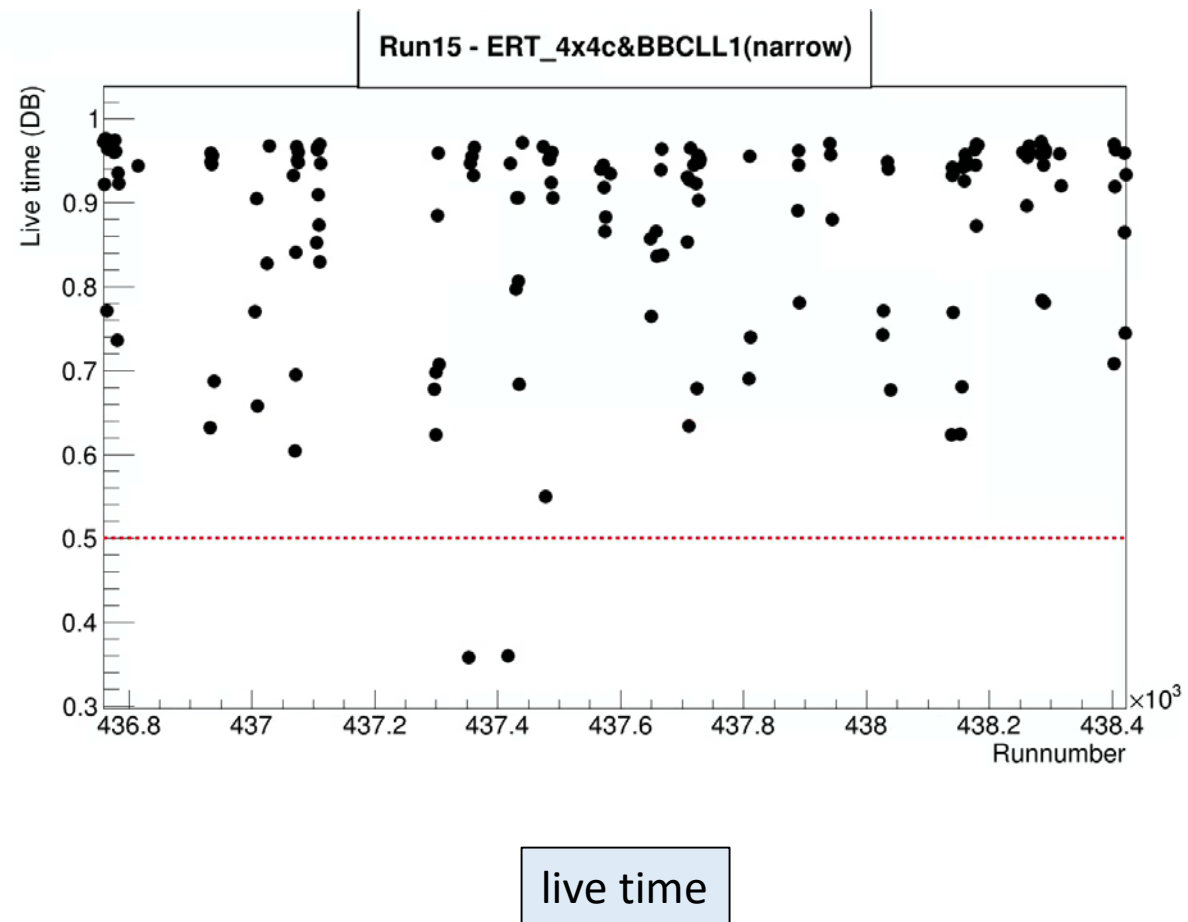
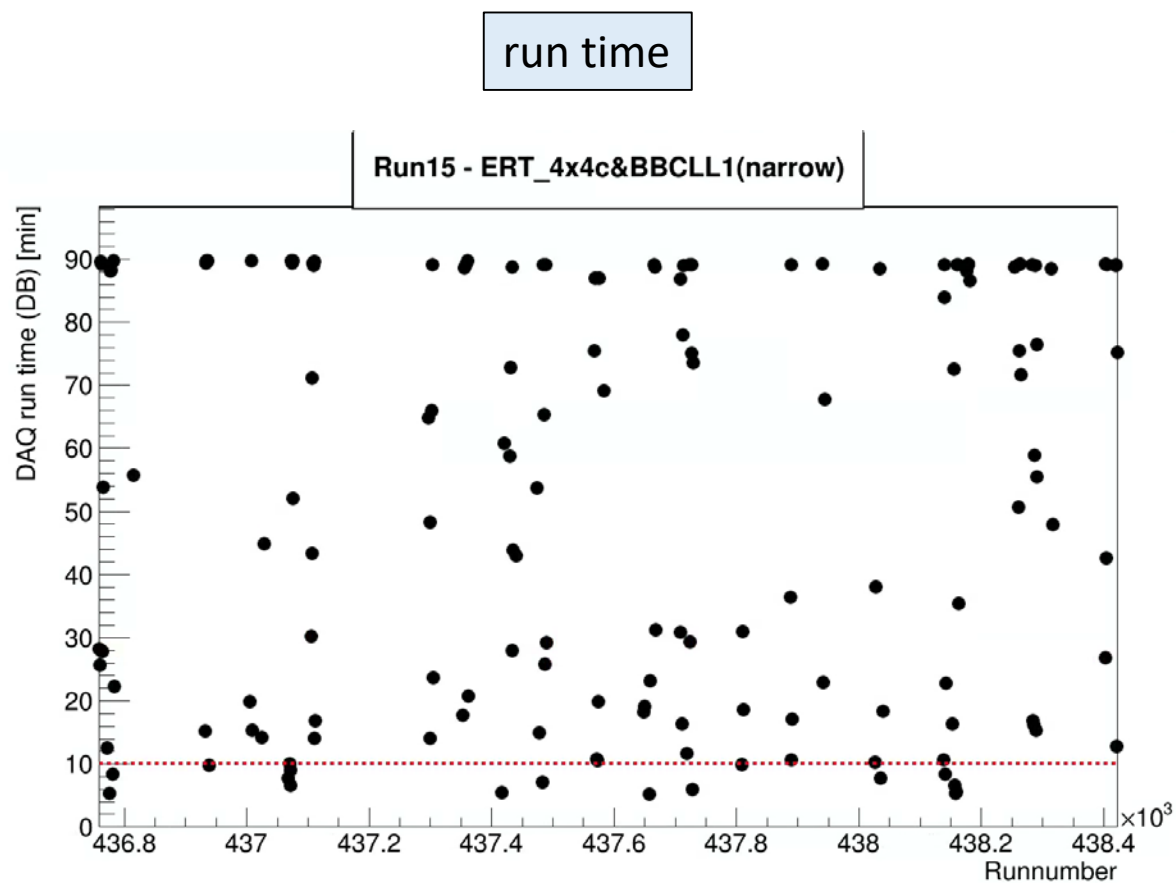
Runlist by ERT dataset (pAI)

- Datasets: Run15pAI200ERTPro104
- 138 runs survive in Analysis Train by using ERT dataset.

436763	436764	436765	436772	436776	436777	436778	436782	436933	436934
436935	436936	437008	437009	437025	437067	437070	437071	437072	437073
437074	437075	437106	437107	437109	437110	437111	437112	437297	437299
437300	437302	437303	437304	437353	437356	437358	437361	437362	437417
437421	437430	437431	437433	437434	437435	437440	437474	437478	437483
437484	437486	437487	437488	437568	437569	437572	437573	437574	437575
437583	437649	437650	437658	437659	437666	437667	437668	437708	437709
437711	437712	437713	437714	437719	437723	437724	437725	437726	437727
437728	437809	437810	437811	437888	437889	437890	437891	437940	437941
437944	438026	438028	438033	438034	438035	438138	438139	438140	438141
438142	438153	438155	438157	438158	438159	438160	438162	438163	438176
438177	438178	438179	438181	438254	438260	438261	438262	438263	438264
438283	438284	438286	438287	438288	438289	438290	438291	438314	438316
438402	438403	438404	438405	438419	438420	438421	438422		

Run QA at daq in Database (pAI)

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



Run QA at daq in Database (pAI)

- **Good run**

- 17 runs are rejected from 138 runs by Run QA from DAQ.
- 121 runs are passed Run QA from DAQ in the DB.

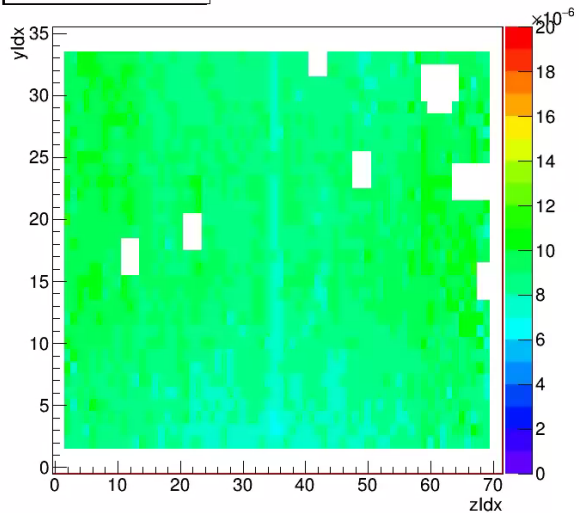
436763	436764	436765	436772	436777	436778	436782	436933	436934	436935
436936	437008	437009	437025	437070	437073	437074	437075	437106	437107
437109	437110	437111	437112	437297	437299	437300	437302	437303	437304
437356	437358	437361	437362	437421	437430	437431	437433	437434	437435
437440	437474	437478	437484	437486	437487	437488	437568	437569	437572
437573	437574	437575	437583	437649	437650	437659	437666	437667	437668
437708	437709	437711	437712	437713	437719	437723	437724	437725	437726
437727	437810	437811	437888	437889	437890	437891	437940	437941	437944
438026	438028	438034	438138	438139	438140	438142	438153	438155	438160
438162	438163	438176	438177	438178	438179	438181	438254	438260	438261
438262	438263	438264	438283	438284	438286	438287	438288	438289	438290
438291	438314	438316	438402	438403	438404	438405	438419	438420	438421
438422									

Warnmap for EMCal

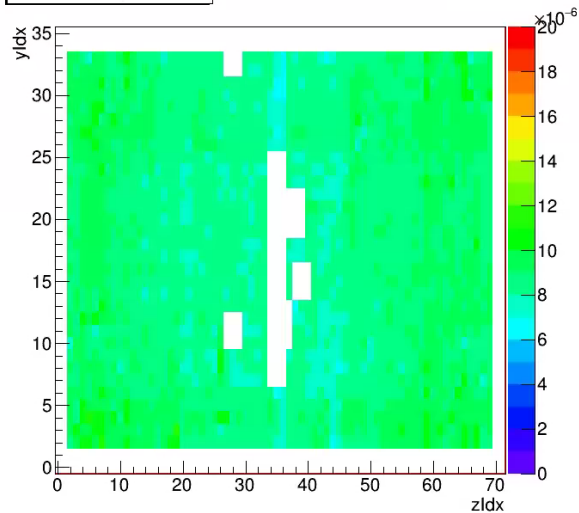
Run15 pp, pAl, pAu dataset

Warnmap for pAu

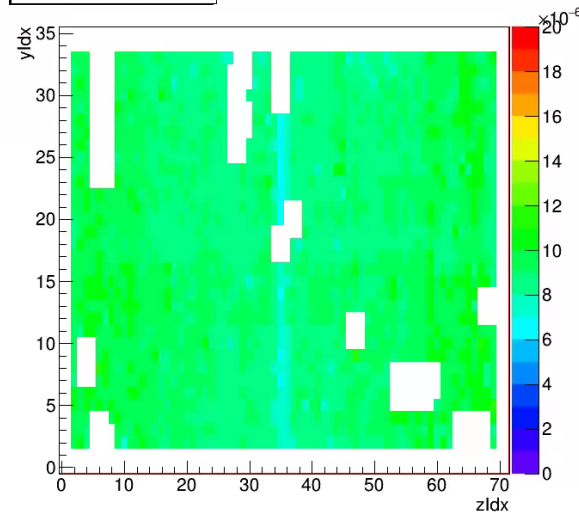
Sector0 (PbSc)



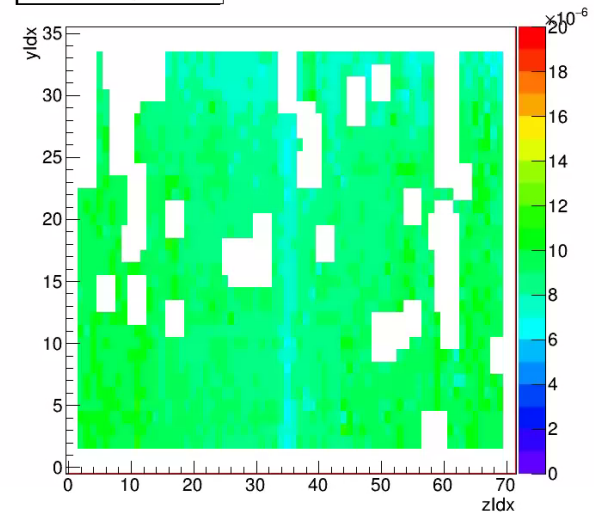
Sector1 (PbSc)



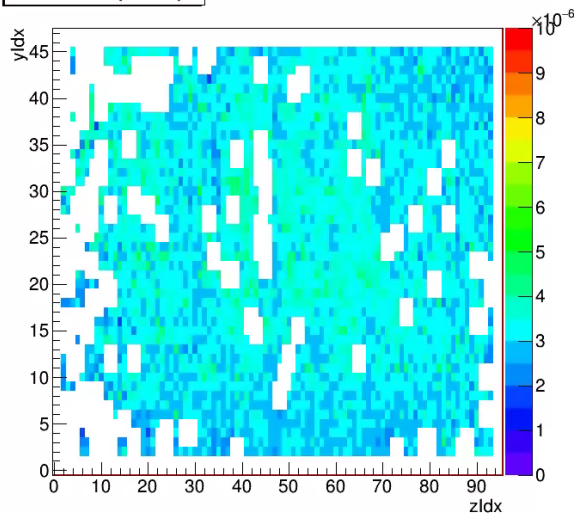
Sector2 (PbSc)



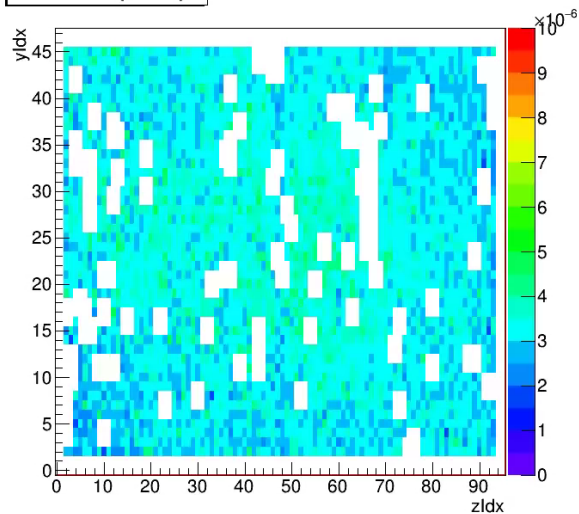
Sector3 (PbSc)



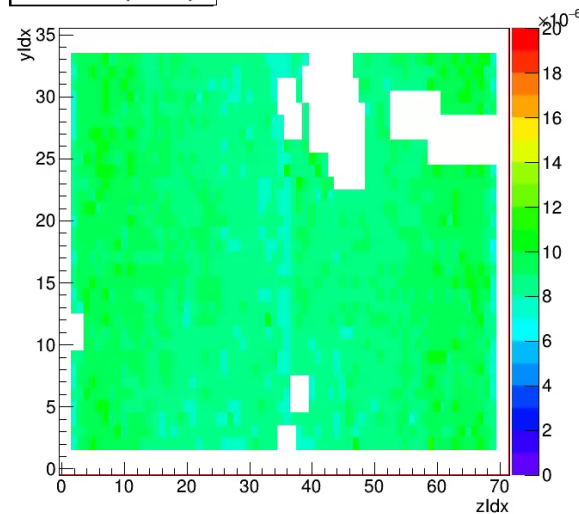
Sector4 (PbGl)



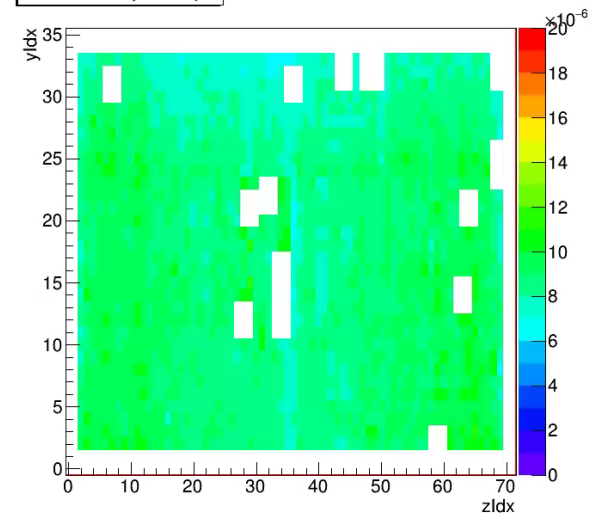
Sector5 (PbGl)



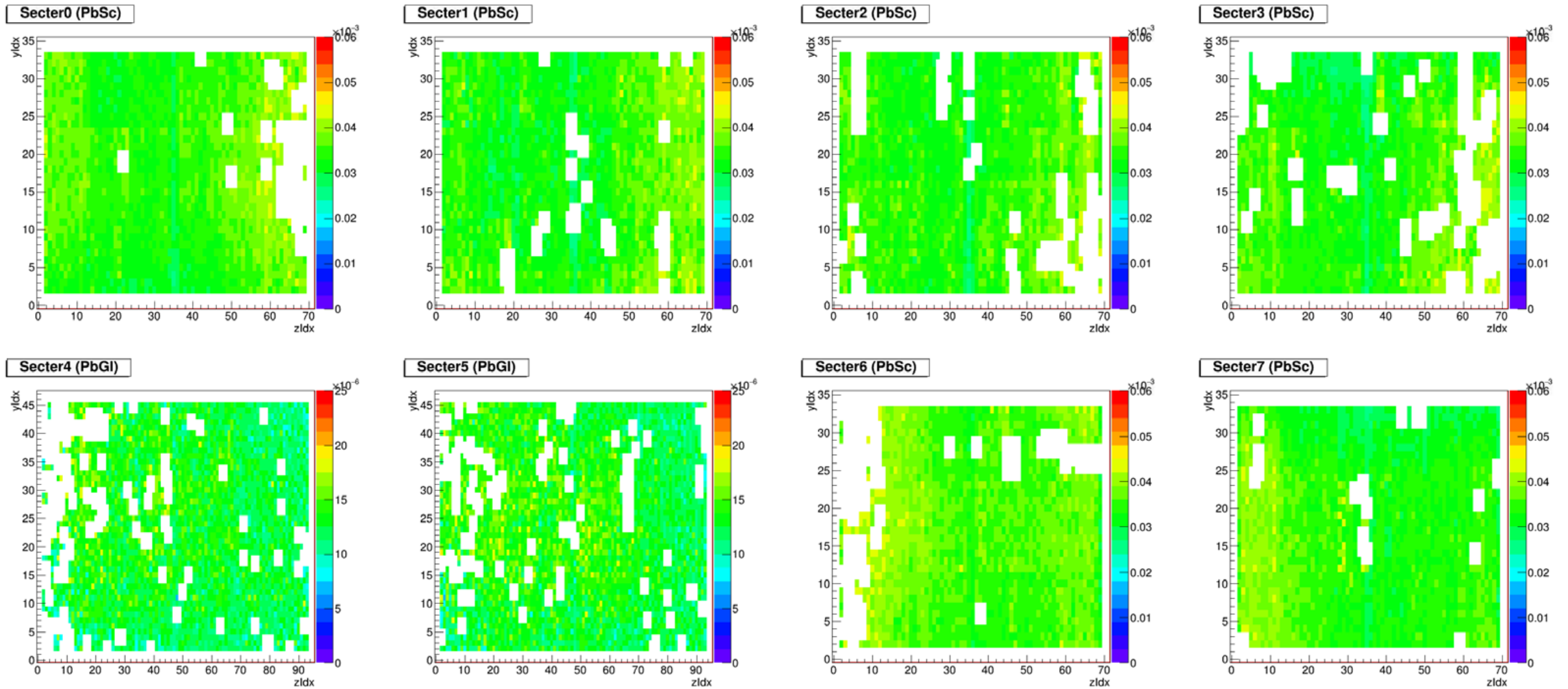
Sector6 (PbSc)



Sector7 (PbSc)

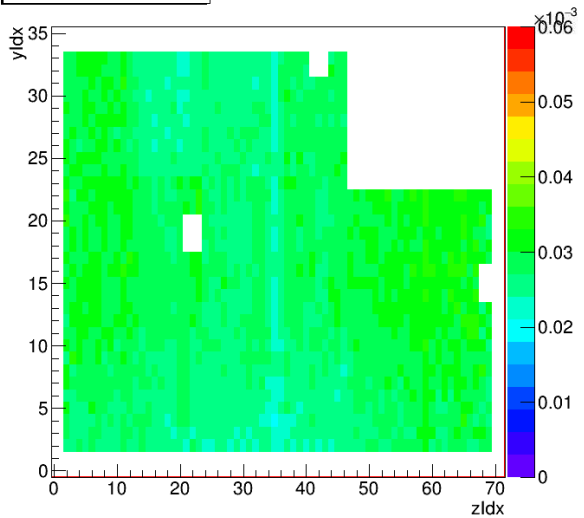


Warnmap for pp

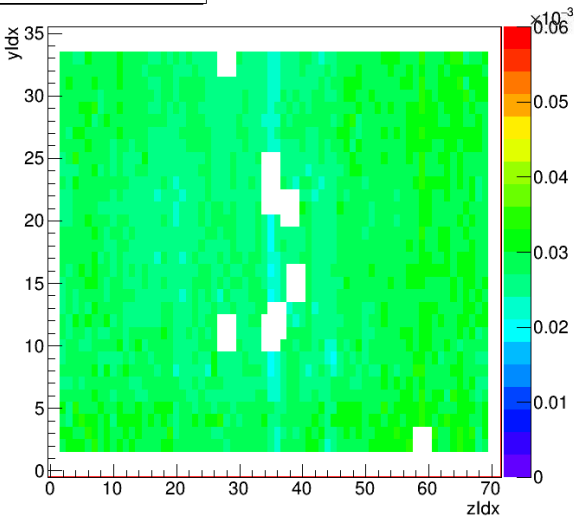


Warnmap for pAI

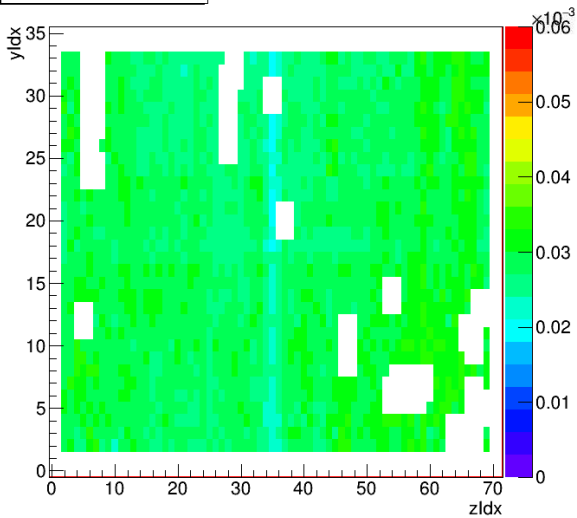
Sector0 (PbSc)



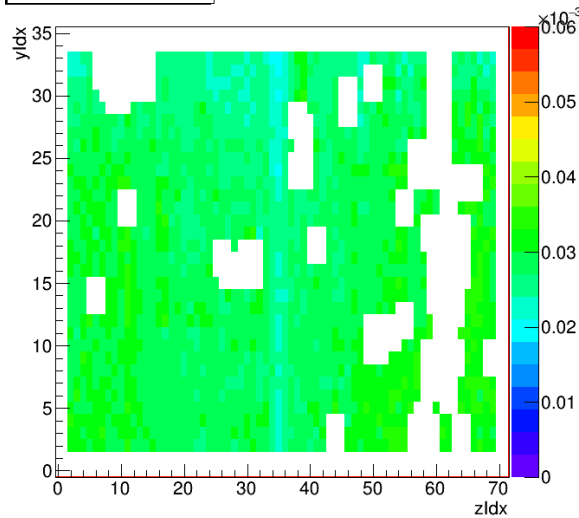
Sector1 (PbSc)



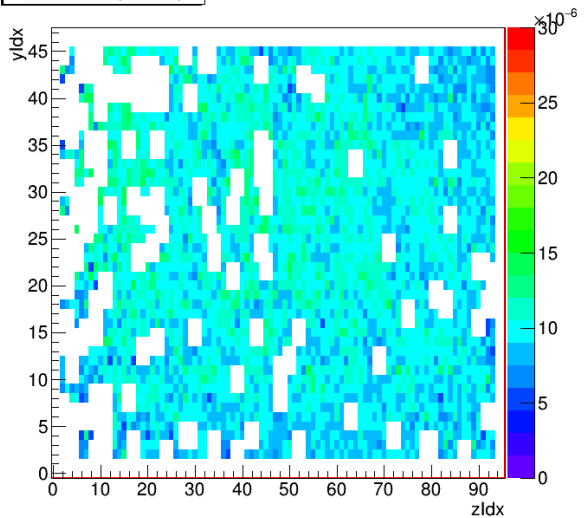
Sector2 (PbSc)



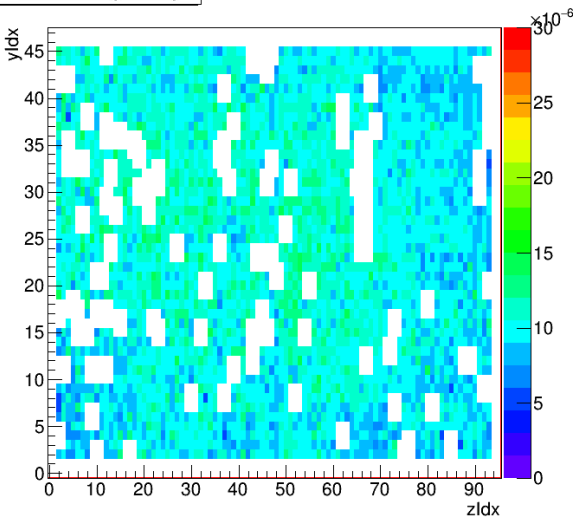
Sector3 (PbSc)



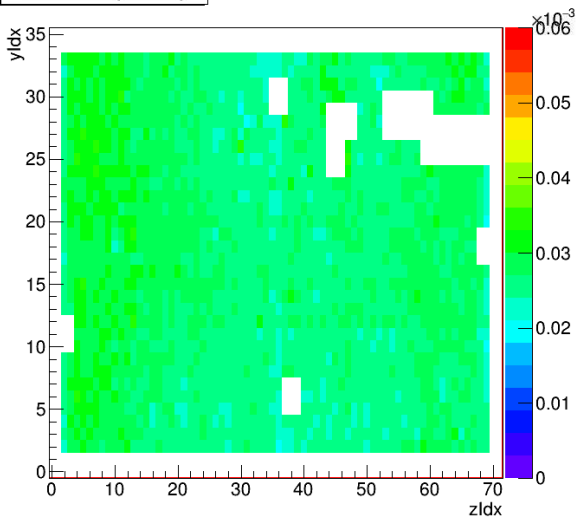
Sector4 (PbGl)



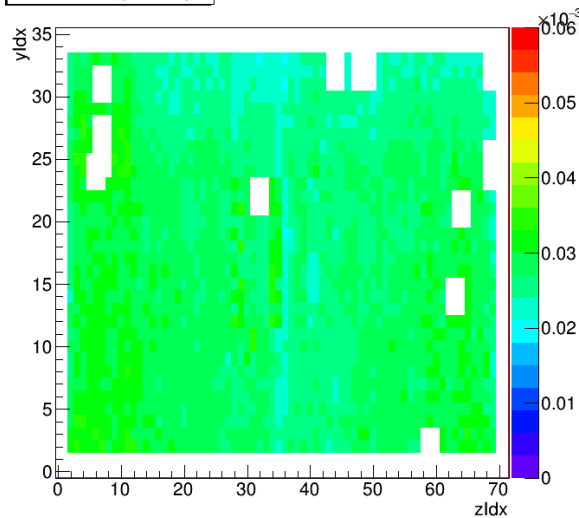
Sector5 (PbGl)



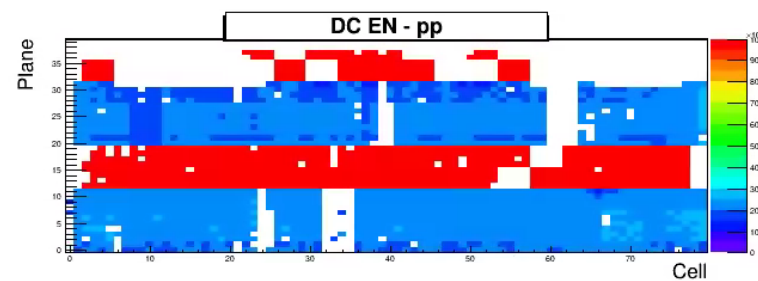
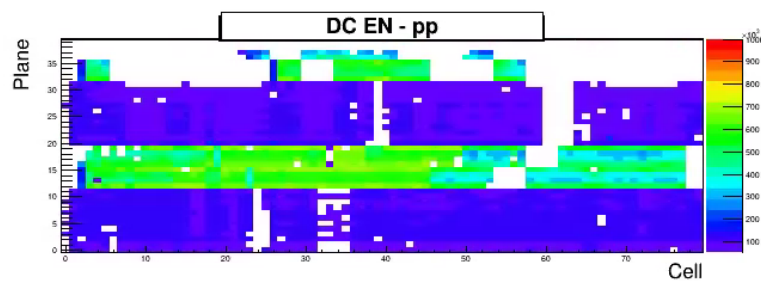
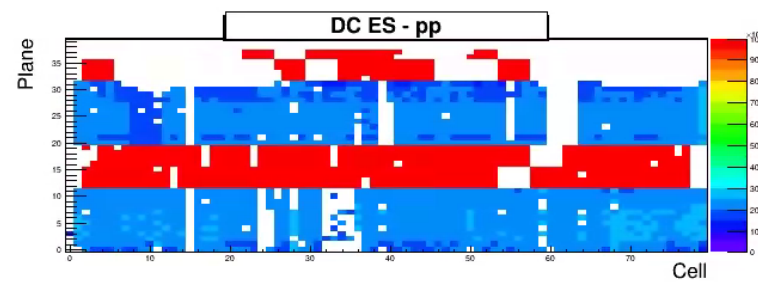
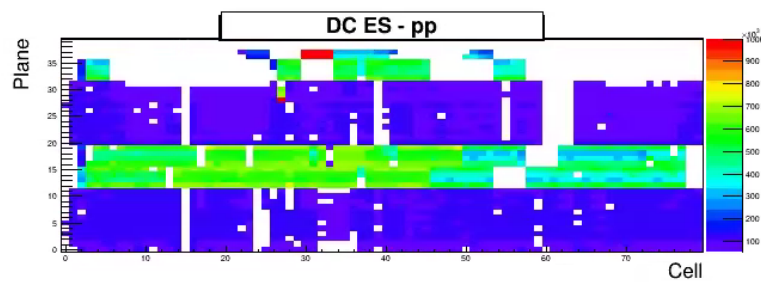
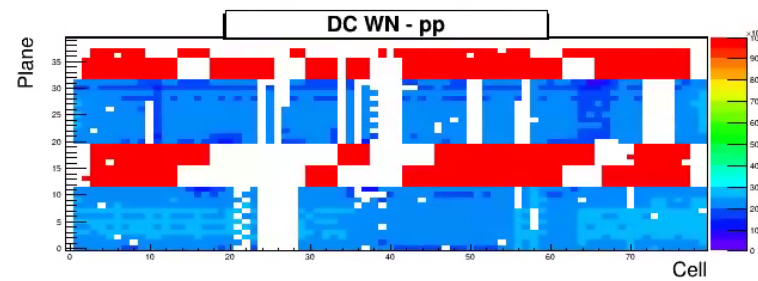
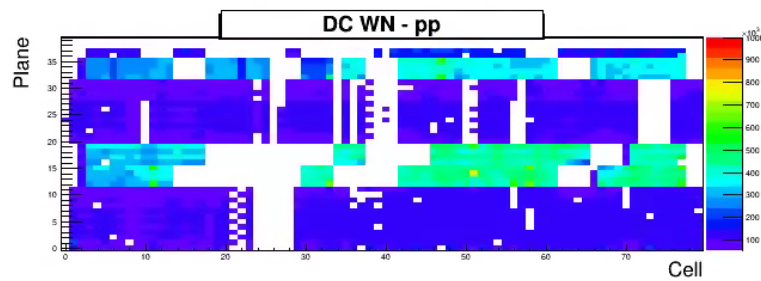
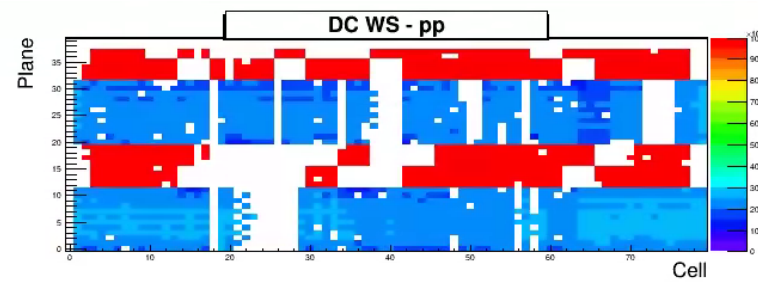
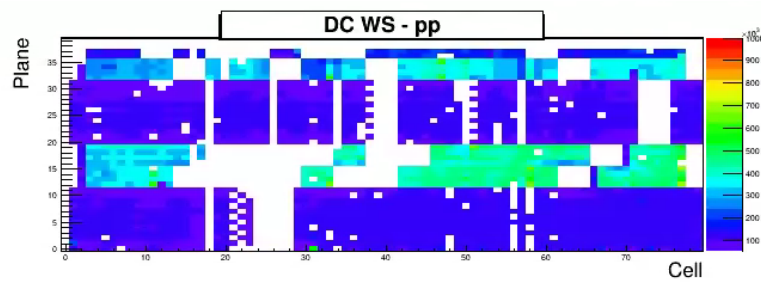
Sector6 (PbSc)



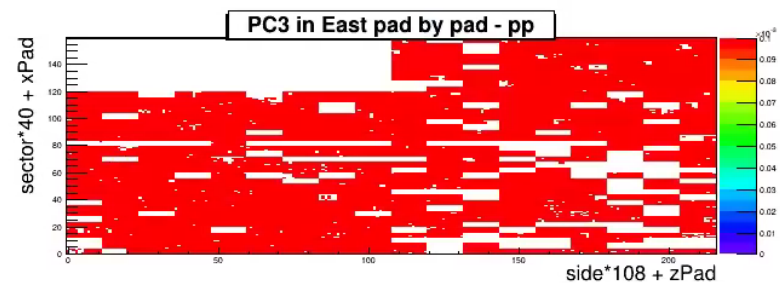
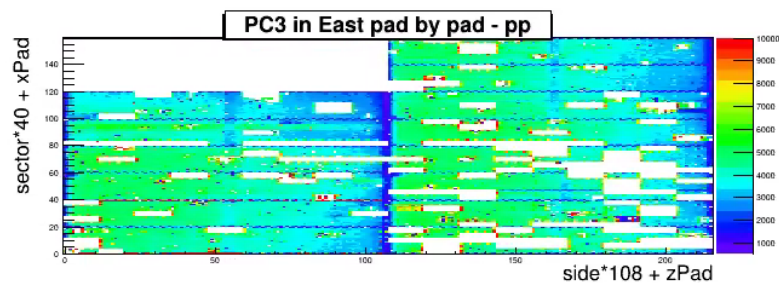
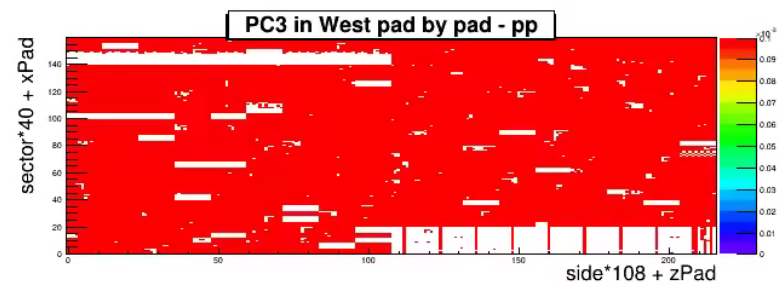
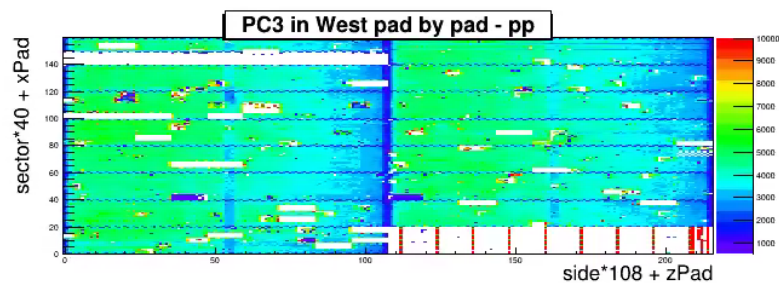
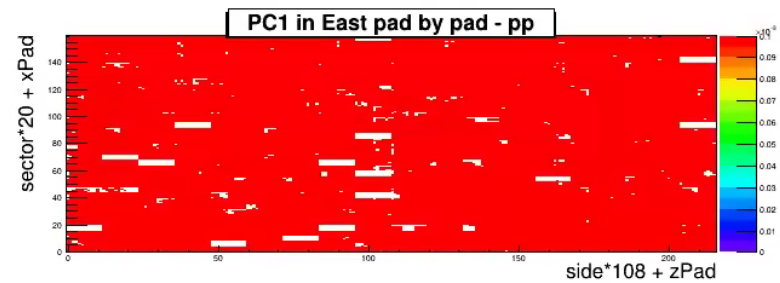
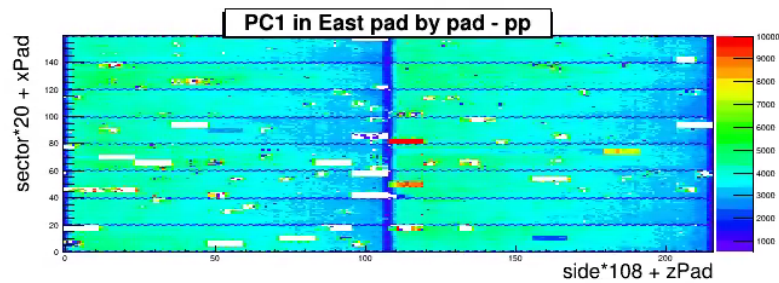
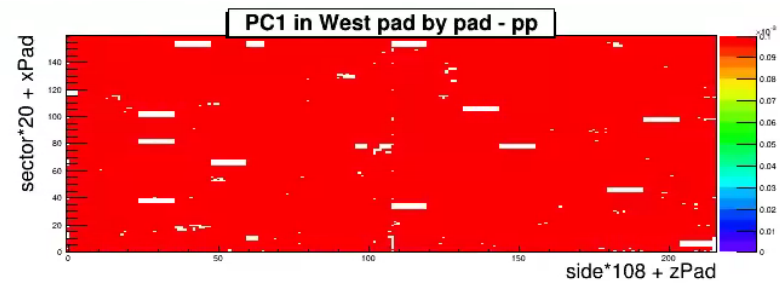
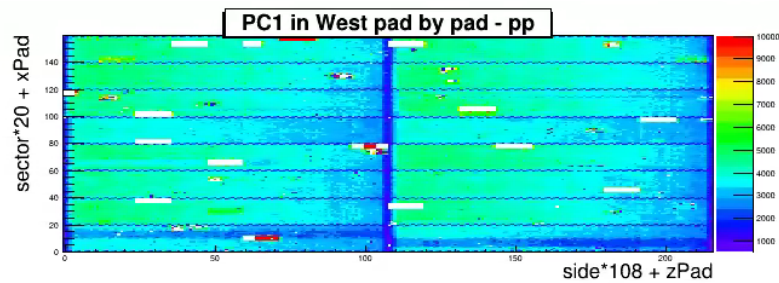
Sector7 (PbSc)



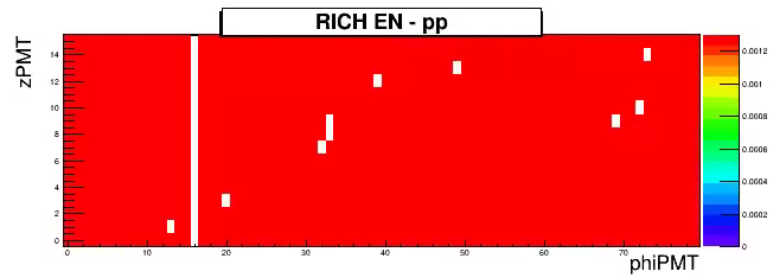
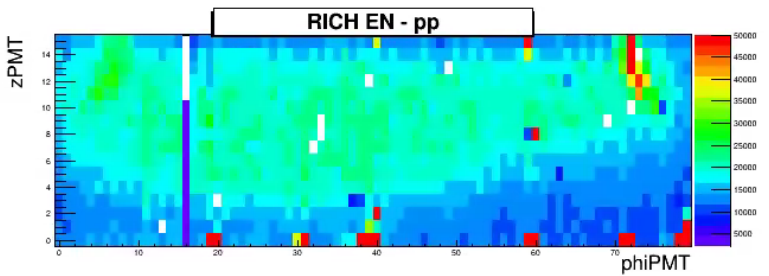
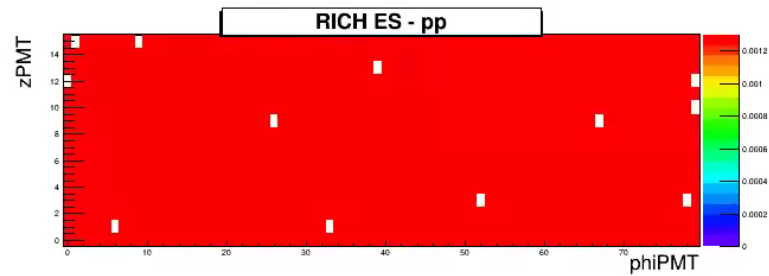
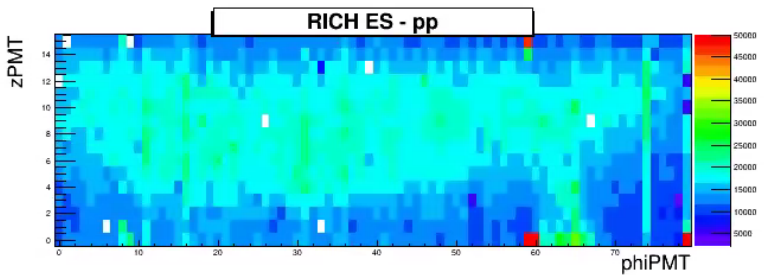
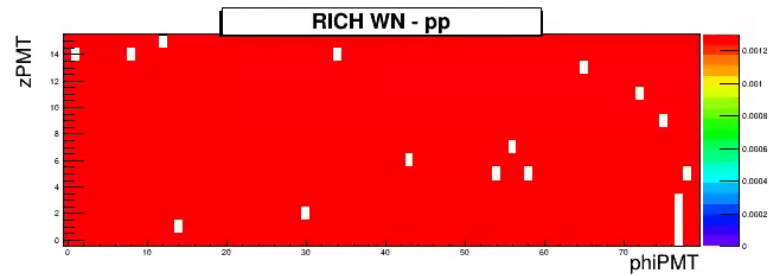
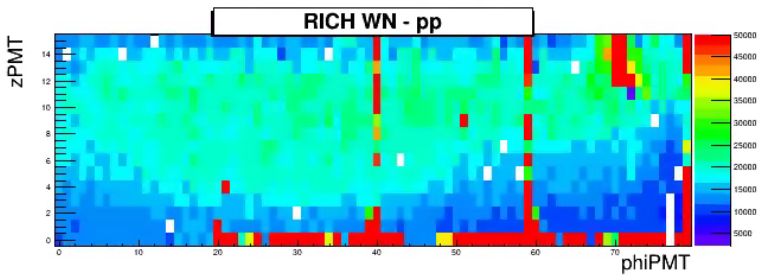
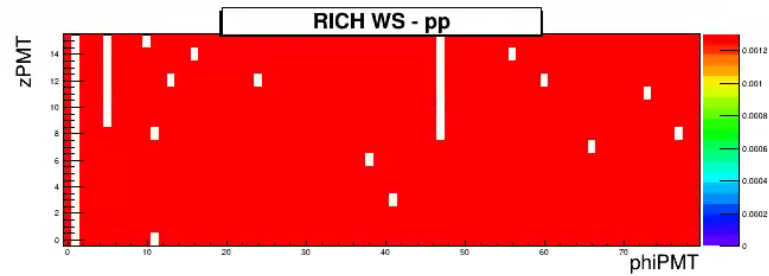
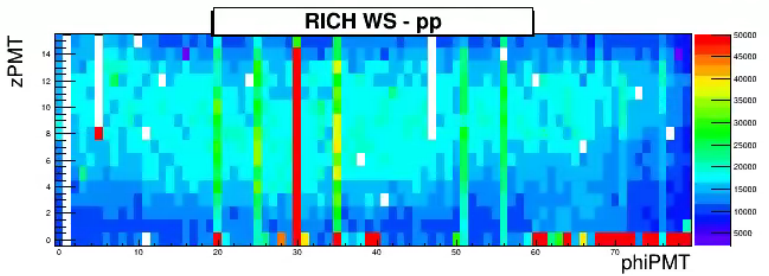
DC dead map



PC dead map



RICH dead map



Acc. X Rec. efficiency

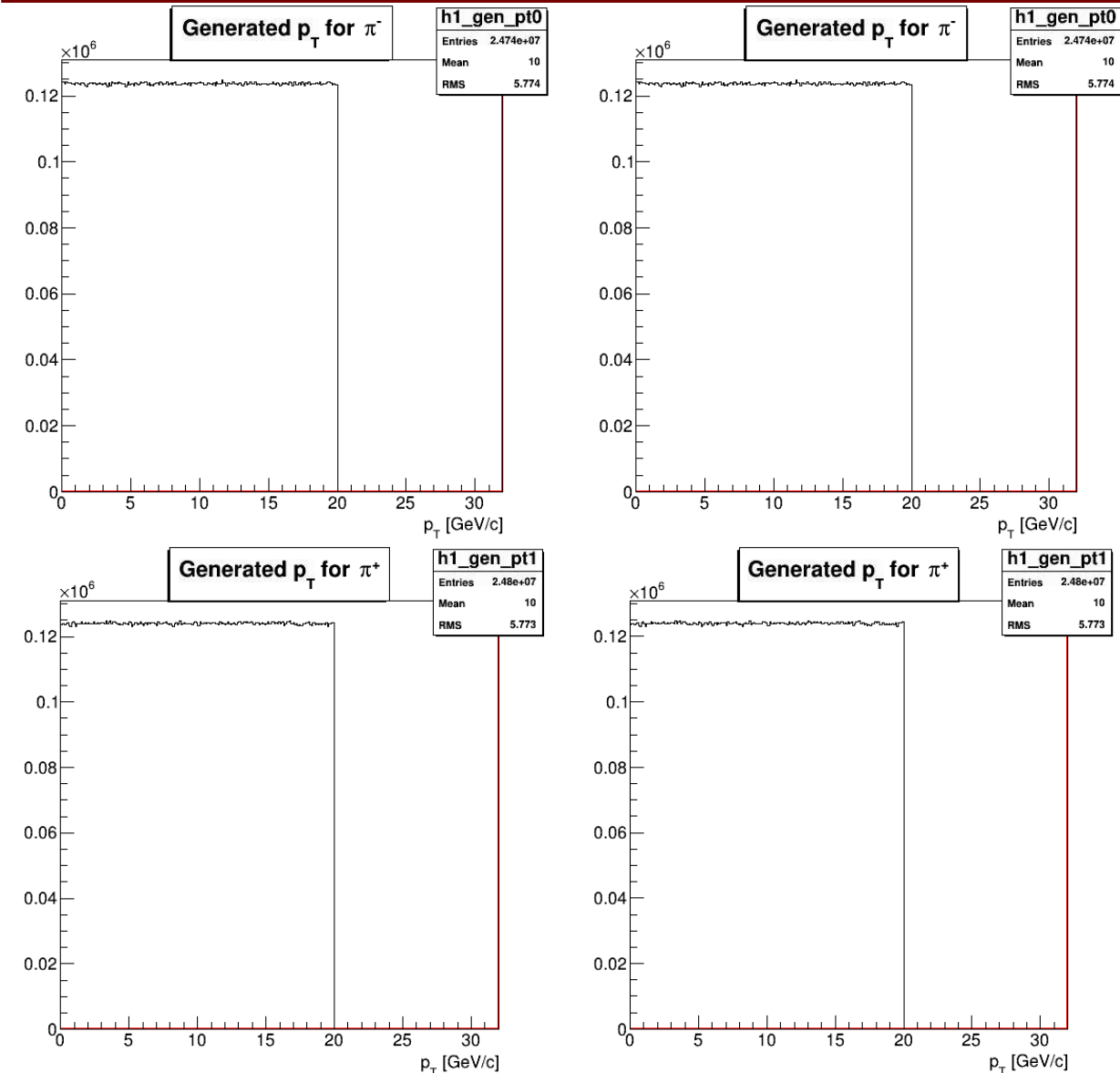
Run15 pp, pAl, pAu dataset

Single π^\pm generation (pp, pA)

- Number of π^\pm : 2,5000,000 for each charge
- $0 < \text{momentum} < 20 \text{ GeV}/c$
- $-0.5 < \text{eta} < 0.5$
- $0 < \phi < 2\pi$
- Primary Vertex = (0,0,0)

Using Run15 with dead channels of DC, PC, RICH

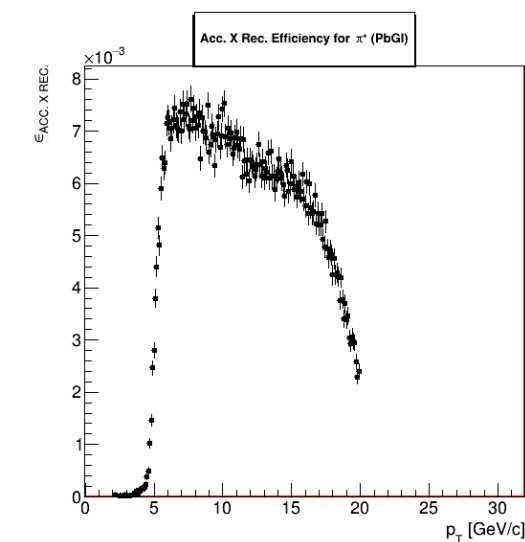
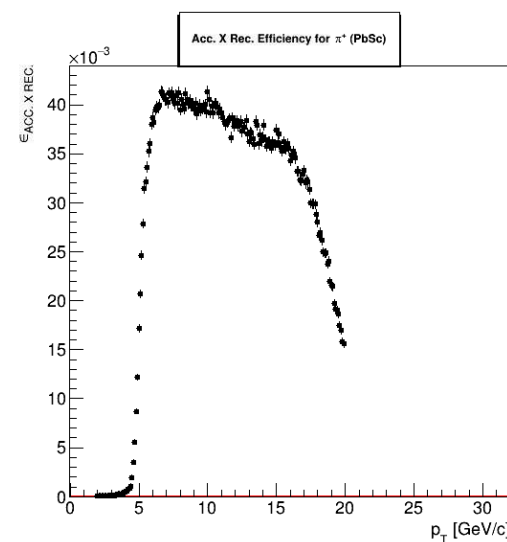
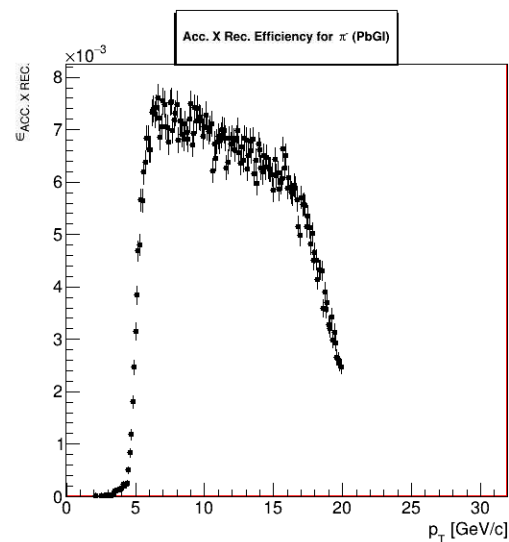
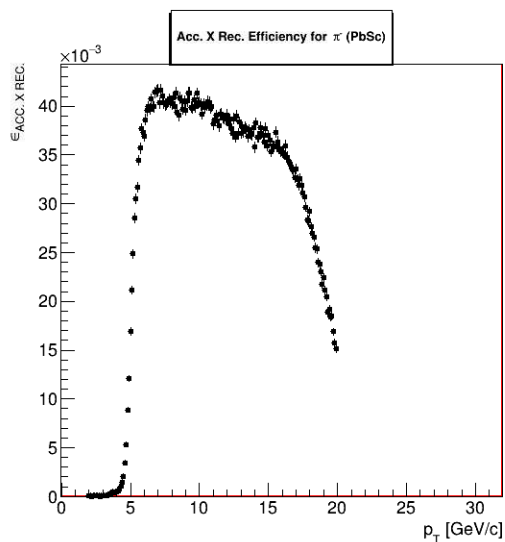
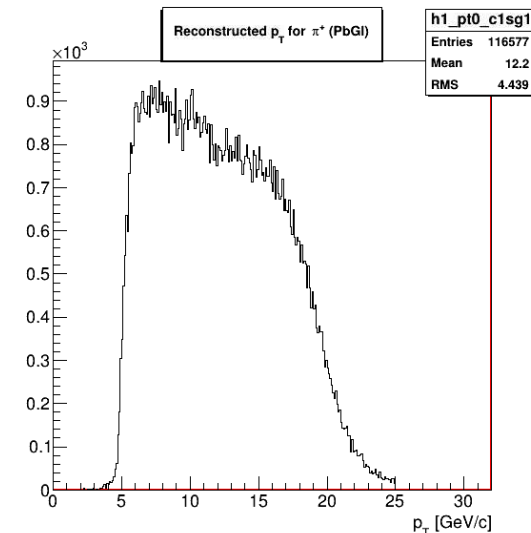
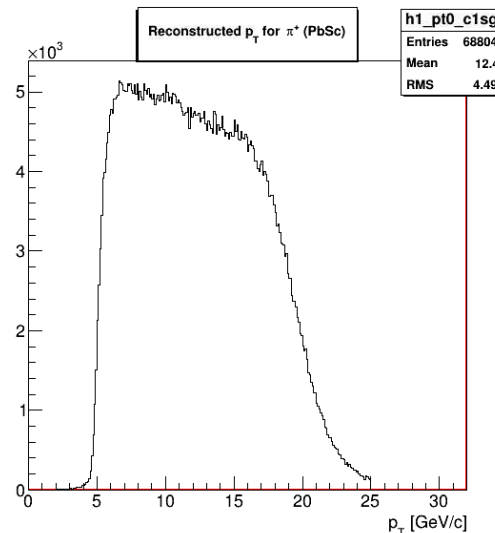
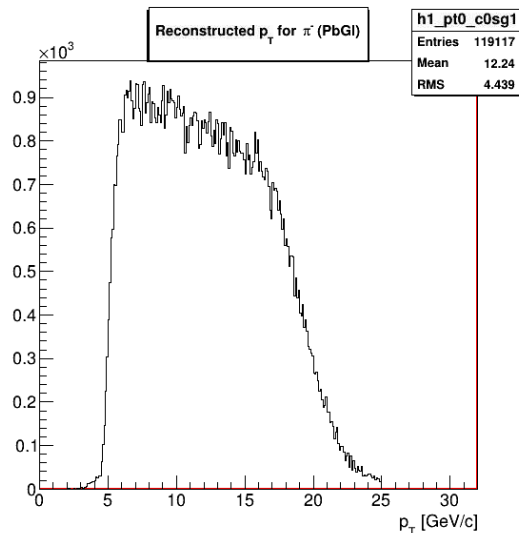
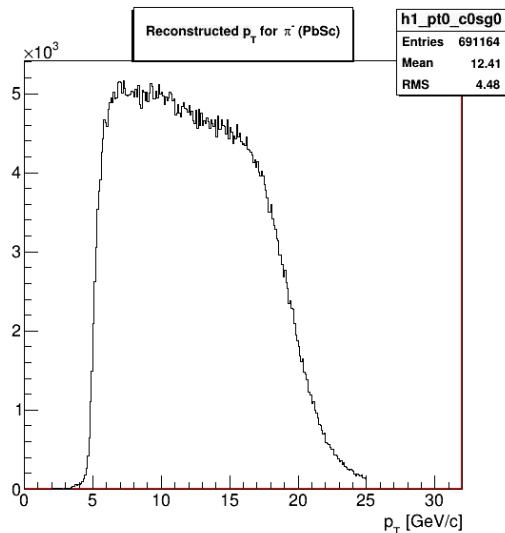
Generated pions (pp)



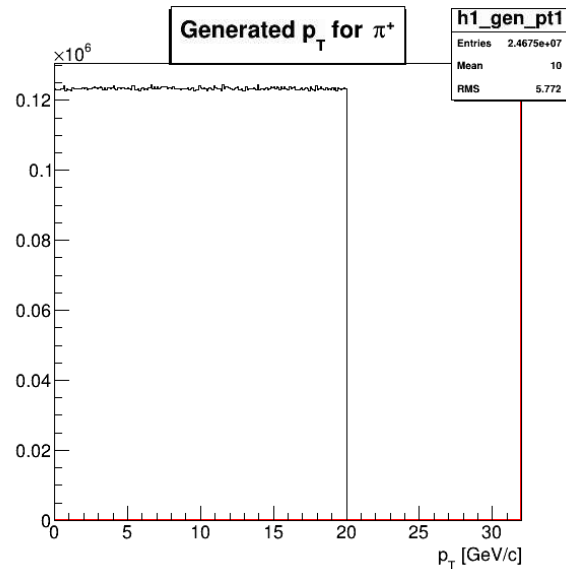
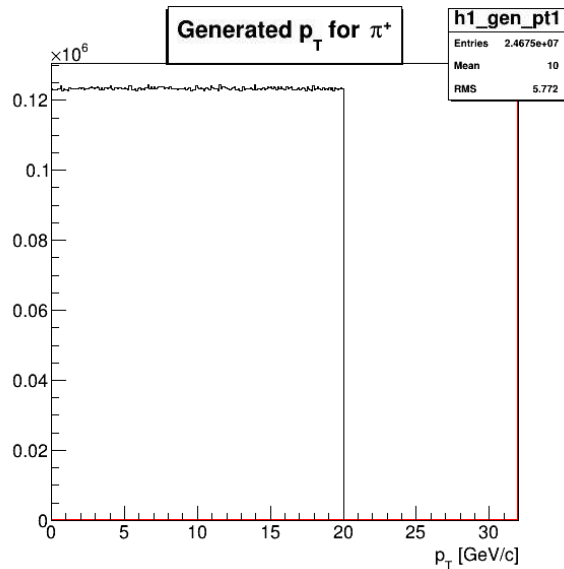
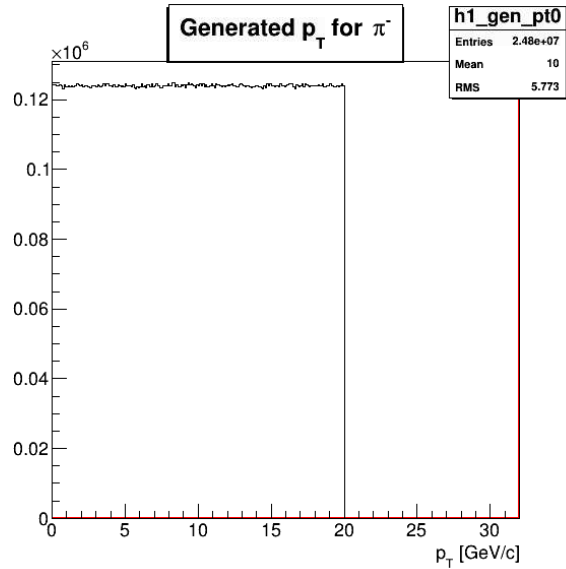
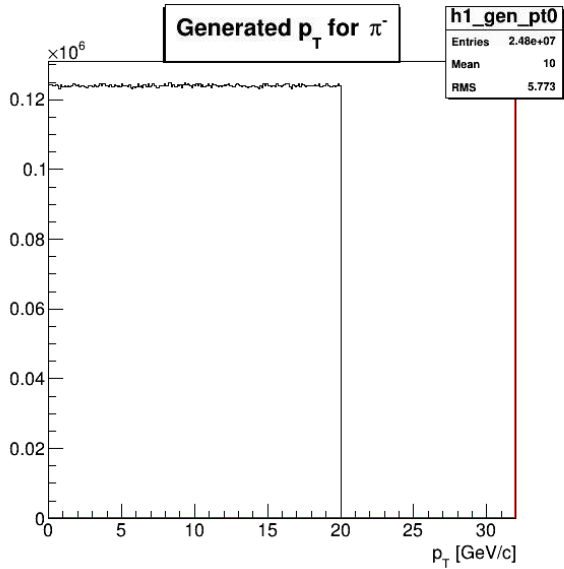
• π^\pm Identification Cuts

- 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) < 0.1
- VII. $0.2 < emce/p < 0.8$ sect > -9000

Reconstructed pions (pp)



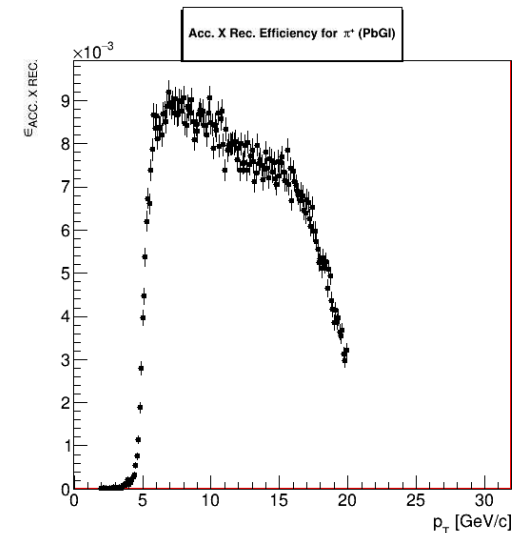
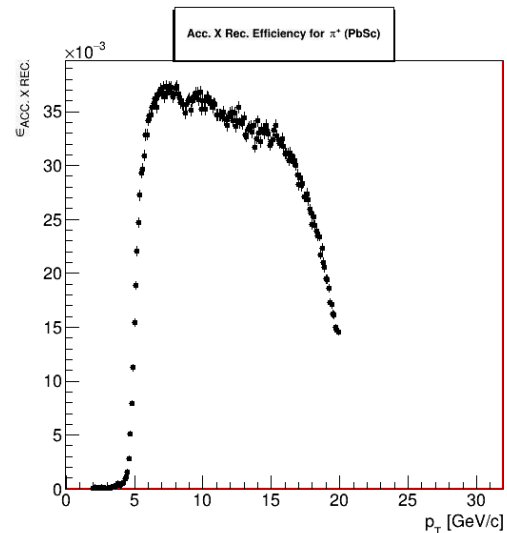
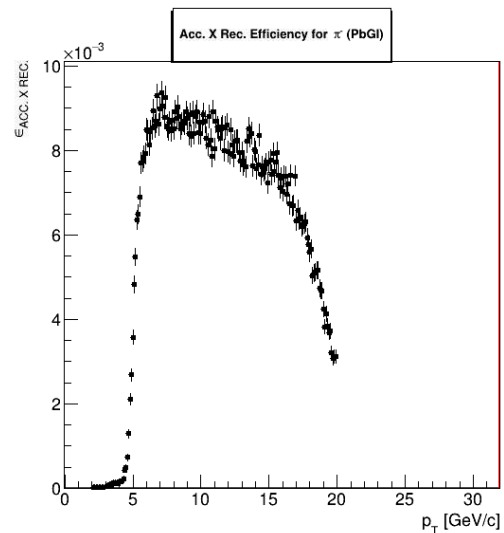
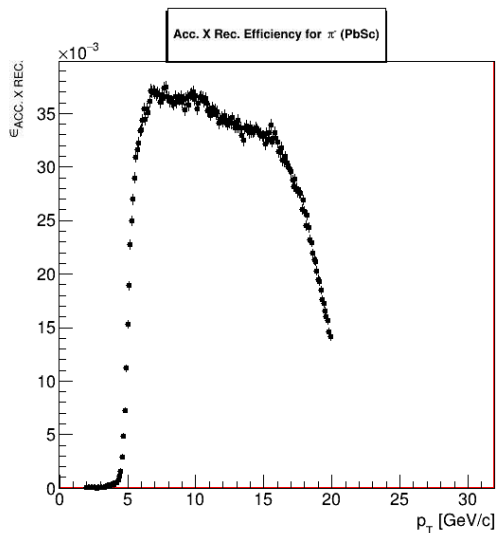
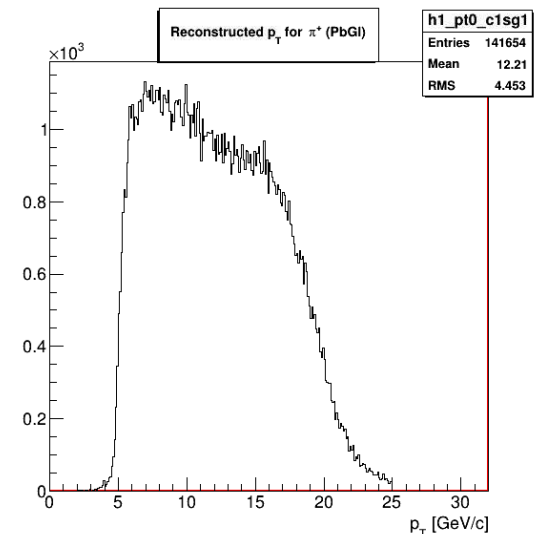
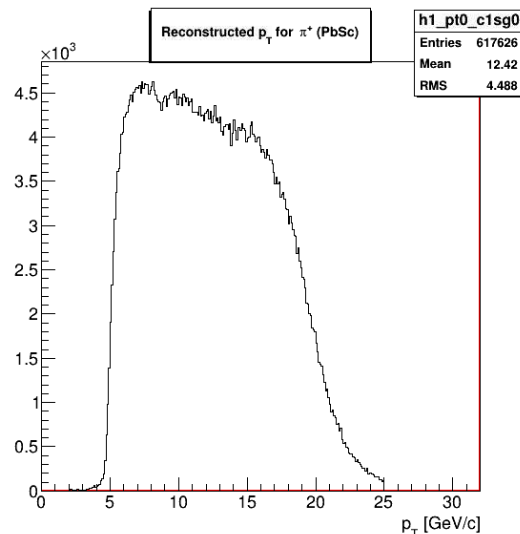
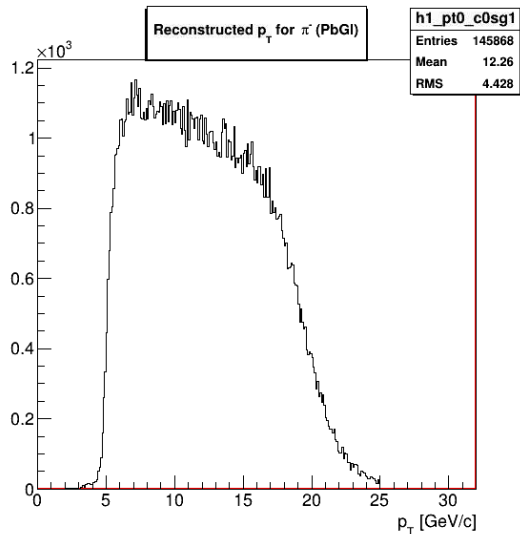
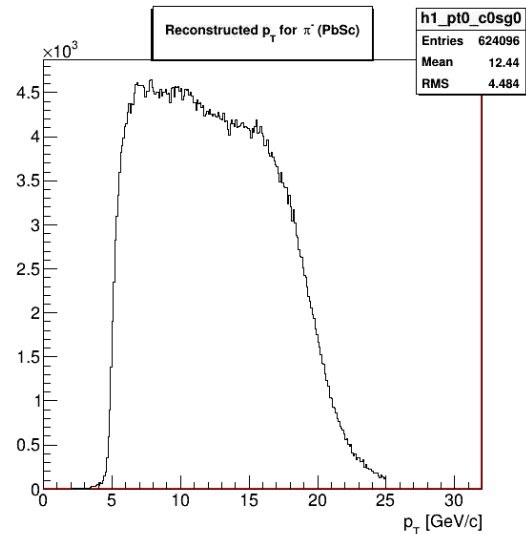
Generated pions (pAl)



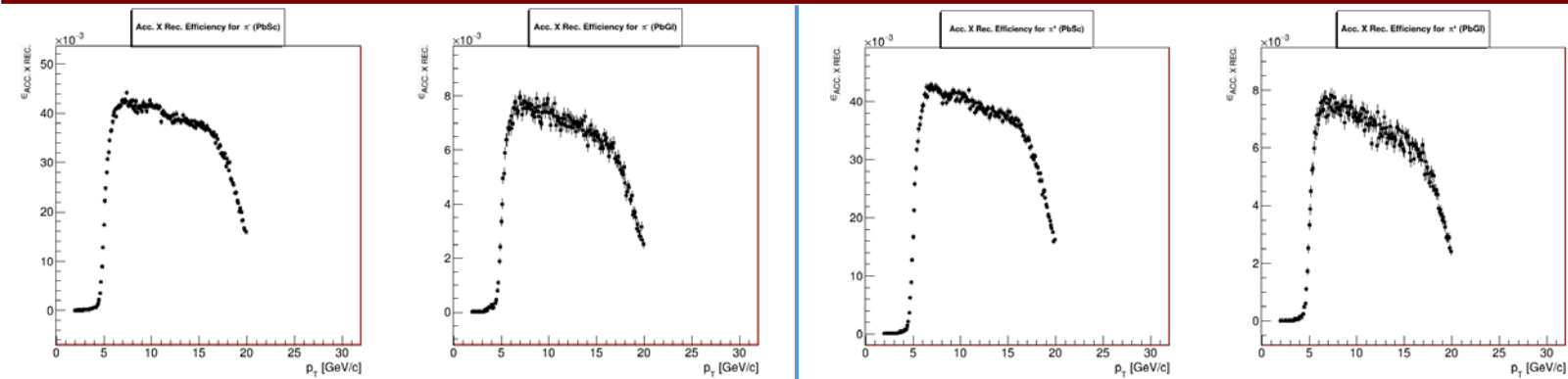
• π^\pm Identification Cuts

- 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) < 0.1
- VII. $0.2 < emce/p < 0.8$ sect > -9000

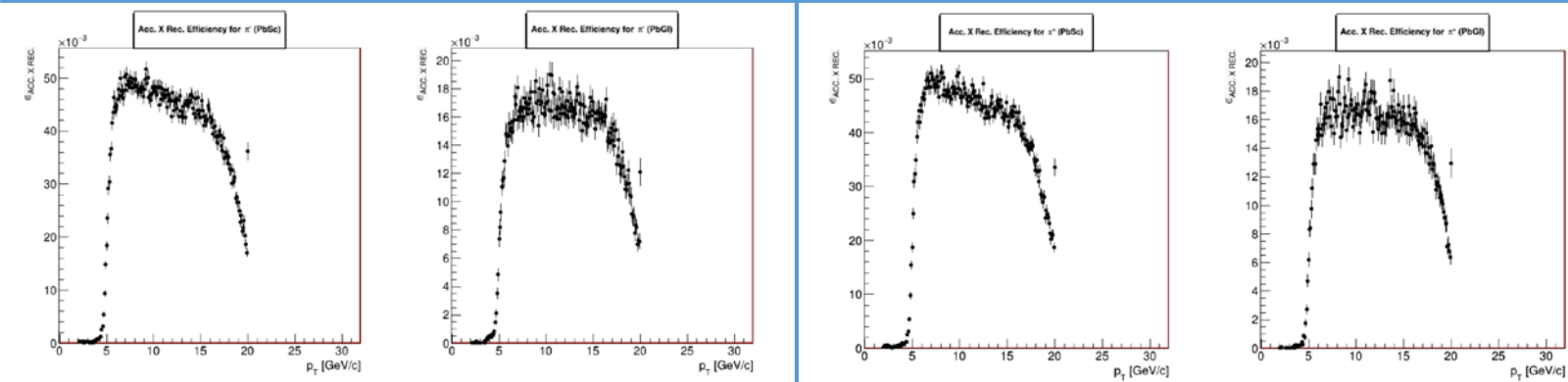
Reconstructed pions (pAl)



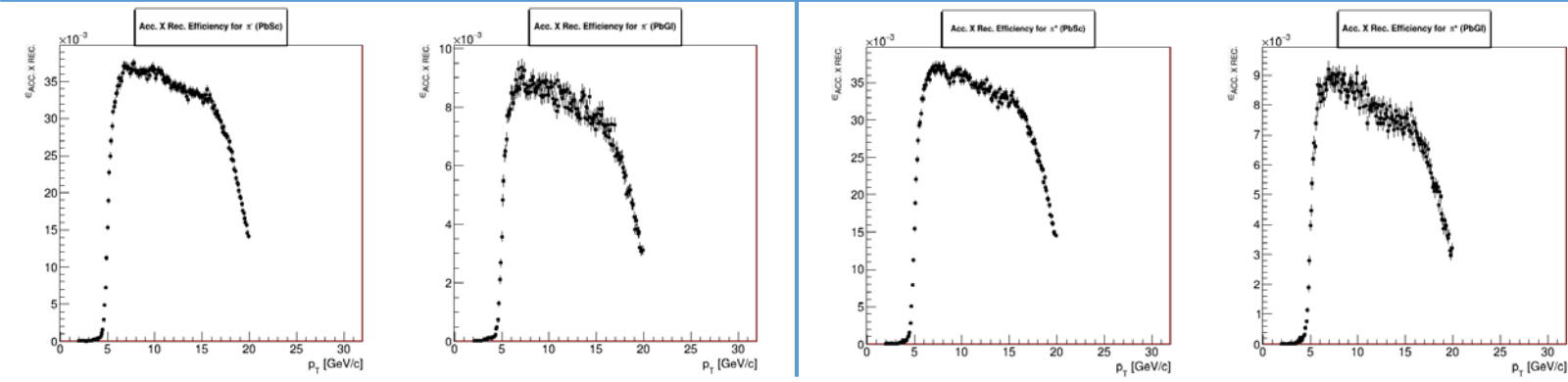
Compare with pp, pAu, pAl.



pp



pAu



pAl