Analysis trains – Status & experience from operation

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Trains overview

o QA train (PWG1 train)

o Filtering trains

o PWGn trains(new)

PWG1 QA train

- PWG1/PilotAnalysis/PilotTrain*.C
  - 4 utility tasks (CDB connect + physics selection+statistics task+centrality selection)
  - Since last offline week added ZDC +TOF +HMPID QA and centrality selection. Two more requests from ITS pending
- Train very popular but becoming heavy: 2-3 GB resident memory
  - Reduce the number of histograms (?)
  - Split the train in 2: a light one (basic QA), very robust and run automatically on everything + a more complex one but with fewer wagons run more on demand basis
- QAresults.root merged in stages – more efficient now
- Running after reconstruction

QA trains

ID	Tag	Status	Done%	Cfg	Out	Total	Done	Active	Waiting	Runs	Output events	Production description	Comment
823	QA51_LHC10a5bsim_p-p	Running	6%			364	22	8	333	2 (126007 - 126008)	15,035	QA51_LHC10a5bsim_p-p: PWG1 QA train for simulation	
817	QA50_LHC11a_TRD_p-p	Completed	0%			7	0			7 (141542 - 141610)		QA50_LHC11a_TRD_p-p: PWG1 QA train(No ZDC)	
814	QA50_LHC10e_p-p_Stage2	Running	97%			1836	1798		2	135 (127712 - 130842)		QA50_LHC10e_p-p_Stage2: PWG1 QA train(No ZDC) _Merging	
812	QA50_LHC10e_p-p_Stage3	Running	94%			157	149		1	156 (127712 - 130840)	133,983,459	QA50_LHC10e_p-p_Stage3: PWG1 QA train(No ZDC) _FinalMerging	
811	QA50_LHC10e_p-p_Stage1	Completed	96%			4106	3946			162 (127712 - 130850)		QA50_LHC10e_p-p_Stage1: PWG1 QA train(No ZDC) _Merging	
810	QA50_LHC11a_p-p	Running	0%			237	0		1	24 (141877 - 143237)		QA50_LHC11a_p-p: PWG1 QA train(No ZDC)	
807	QA50_LHC10e_p-p	Running	86%			13291	11499		2	212 (127712 - 130850)	227,761,995	QA50_LHC10e_p-p: PWG1 QA train(No ZDC)	
806	QA49_LHC10h_Pb-Pb_	Running	61%			1118	693	25	57	5 (137366 - 139172)	587,953	QA49_LHC10h_Pb-Pb_ : PWG1 QA train	
803	QA48_LHC10e_p-p_	Technical stop	4%			2494	118			49 (127719 - 130850)	712,537	QA48_LHC10e_p-p_: PWG1 QA train	FPE in ZDC QA
793	QA46_LHC11a_p-p	Completed	0%			23	0			21 (141805 - 143236)		QA46_LHC11a_p-p: PWG1 QA train	
787	QA45_LHC10hPbPb_Stage3	Completed	77%			171	132			160 (136833 - 139517)	10,596,176	QA45_LHC10hPbPb_Stage3: PWG1 QA train _FinalMerging	
786	QA45_LHC10hPbPb_Stage2	Completed	99%			2228	2227			159 (136833 - 139517)		QA45_LHC10hPbPb_Stage2: PWG1 QA train _Merging	
785	QA45_LHC10hPbPb_Stage1	Completed	99%			5250	5249			162 (136833 - 139517)		QA45_LHC10hPbPb_Stage1: PWG1 QA train _Merging	
782	QA45_LHC10hPbPb	Completed	91%			18684	17150			163 (136833 - 139517)	19,121,382	QA45_LHC10hPbPb: PWG1 QA train	
769	QA46_LHC10e_p-p_Stage3	Completed	88%			27	24			28 (127819 - 130848)	27,227,839	QA46_LHC10e_p-p_Stage3: PWG1 QA train _FinalMerging	
768	QA46_LHC10e_p-p_Stage2	Completed	94%			295	280			29 (127819 - 130848)		QA46_LHC10e_p-p_Stage2: PWG1 QA train _Merging	
767	QA46_LHC10e_p-p_Stage1	Completed	91%			537	491			30 (127819 - 130848)		QA46_LHC10e_p-p_Stage1: PWG1 QA train _Merging	
766	QA46_LHC10e_p-p	Running	48%			2602	1261	2	1	47 (127719 - 130848)	28,512,577	QA46_LHC10e_p-p: PWG1 QA train	
765	QA44_LHC10epp_Stage3	Completed	100%			40	40			1 (129519 - 129519)	343,872	QA44_LHC10epp_Stage3: PWG1 QA train (no TPC)_FinalMerging	
764	QA44_LHC10epp_Stage2	Completed	85%			7	6			1 (129519 - 129519)		QA44_LHC10epp_Stage2: PWG1 QA train (no TPC)_Merging	
761	QA44_LHC10epp_Stage1	Completed	100%			13	13			1 (129519 - 129519)		QA44_LHC10epp_Stage1: PWG1 QA train (no TPC)_Merging	
760	QA44_LHC10epp	Completed	95%			40	38			1 (129519 - 129519)	343,872	QA44_LHC10epp: PWG1 QA train (no TPC)	
758	QA43_LHC10h_Stage3	Completed	100%			62	62			62 (137608 - 139517)		QA43_LHC10h_Stage3: PWG1 QA train_FinalMerging	
757	QA43_LHC10h_Stage2	Completed	89%			222	198			67 (137608 - 139517)		QA43_LHC10h_Stage2: PWG1 QA train_Merging	
756	QA43_LHC10h_Stage1	Completed	96%			1583	1533			68 (137161 - 139514)		QA43_LHC10h_Stage1: PWG1 QA train_Merging	
727	QA43_LHC10h	Running	71%			7238	5198	278		69 (137161 - 139517)		QA43_LHC10h: Physics selection, centrality and QAsym	
726	QA37_LHC10h8_spcsim_Merging	Completed	0%			1	0			1 (137161 - 137161)		QA37_LHC10h8_spcsim_Merging: PWG1 QA train_Merging	

Number of MB events processed now available: input, processed, filtered
Failure rate quite high, mostly due to memory usage and sometimes I/O errors

FILTERING trains

- Producing centrally main AODs and delta AODs for data and MC productions
  - Currently vertexing AOD, muon/dimuon filters, dielectron filter (pp only)
- Basic AODs provided automatically (for muon group and any other analysis not requiring the latest and best corrections (no tender applied)
- AODs for all productions including all corrections(TENDER). More demanding and requiring that everything works synchroneus
  - Started on demand, as soon as possible after a reconstruction pass or a major fix

Summary of recent filtering

ID	Tag	Status	Done%	Cfg	Out	Total	Done	Active	Waiting	Runs	Output events	Production description	Comment
822	FILTER_Pb-Pb_040_LHC10h	Running	59%			26468	15694	2213	6525	155 (136833 - 139517)	11,403,262	FILTER_Pb-Pb_040_LHC10h: TPC tender, TOF corrections-> AODstd(+jets), vertexing, muons	
818	FILTER_p-p037_LHC10e	Running	85%			12967	11063		1	219 (127712 - 130850)	225,152,289	FILTER_p-p037_LHC10e: No tender-> AODstd(+jets), vertexing, muons, dielectrons	
816	FILTERpass1_025_LHC11a	Completed	100%			3	3			1 (142881 - 142881)		FILTERpass1_025_LHC11a: PhysSel -> AODs: std(+jets)/(di)muon/vertexing/dielectrons	
794	FILTER_p-p_036_LHC10d	Completed	96%			4251	4109			93 (122374 - 126437)	197,940,273	FILTER_p-p_036_LHC10d: tenders,no V0, TOF corrections -> AODstd(+jets), vertexing, muons, dielectrons	
789	FILTER_p-p_035_LHC10c	Completed	98%			5004	4945			189 (118503 - 121040)	137,368,646	FILTER_p-p_035_LHC10c: tenders w. V0, TOF corrections -> AODstd(+jets), vertexing, muons, dielectrons	
788	FILTER_p-p_035_LHC10b	Completed	99%			1607	1601			135 (114737 - 117223)	37,783,789	FILTER_p-p_035_LHC10b: tenders w. V0, TOF corrections -> AODstd(+jets), vertexing, muons, dielectrons	
775	FILTER_p-p_034_LHC10c	Completed	100%			123	123			2 (120822 - 121040)	6,880,957	FILTER_p-p_034_LHC10c: tenders w. V0, TOF corrections -> AODstd(+jets), vertexing, muons, dielectrons	
774	FILTER_p-p_034_LHC10b	Completed	100%			23	23			2 (117116 - 117220)	3,497,142	FILTER_p-p_034_LHC10b: tenders w. V0, TOF corrections -> AODstd(+jets), vertexing, muons	
773	FILTER_PbPb033_LHC10h	Completed	99%			12923	12911			130 (136833 - 139517)	14,609,851	FILTER_PbPb033_LHC10h: tenders w. TOF corrections, centrality, AODstd(+jets), vertexing_highmult	
771	FILTER_PbPb032_LHC11a3	Completed	98%			2116	2078			5 (137161 - 137243)	211,770	FILTER_PbPb032_LHC11a3: centrality, stdAOD(+jets)/vertexing	
763	FILTER_PbPb031_LHC10h	Running	62%			8945	5615	971	1519	72 (137135 - 139314)	4,437,720	FILTER_PbPb031_LHC10h: tenders w. TOF corrections, centrality, AODstd(+jets), vertexing_highmult	
702	FILTERpass2029_LHC10d	Completed	97%			3243	3168			60 (122374 - 126437)		FILTERpass2029_LHC10d: PhysSel -> AODs: std(+jets)/(di)muon/vertexing/dielectrons	
701	FILTERpass1028_LHC10h	Completed	99%			19331	19270			54 (136833 - 138197)		FILTERpass1028_LHC10h: PhysSel -> AODs: std(+jets)/(di)muon/vertexing/dielectrons	
691	FILTERmuon027_LHC10h	Completed	98%			2250	2226			23 (137370 - 139504)		FILTERmuon027_LHC10h: ESD+PhysSel -> AODs: std(+jets)	
684	FILTERmuon026_LHC10h_Merging	Completed	97%			47	46			42 (-1 - 137848)		FILTERmuon026_LHC10h_Merging: Tender+PhysSel -> AODs: std(+jets)/(di)muon/vertexing/dielectrons_Merging	
682	FILTERmuon026_LHC10h	Completed	97%			6674	6522			43 (137161 - 137848)		FILTERmuon026_LHC10h: Tender+PhysSel -> AODs: std(+jets)/(di)muon/vertexing/dielectrons	
677	FILTERpass1_025_LHC10h	Technical stop	1%			1146	13			9 (137161 - 137370)		FILTERpass1_025_LHC10h: PhysSel -> AODs: std(+jets)/(di)muon/vertexing/dielectrons	Crash due to vertexi...

Important ongoing productions for PbPb pass1 and p-p pass2 with all tender corrections in.

AOD size limited mostly by job real time (1/2 hours per ESD file)

Memory very stable at less than 2 GB.

1 GB AODs (std + vertexing) / (2000 PbPb events) in 5 hours

Central PWGn analysis trains

- Initiative started before last offline week
  - Start with one central train per PWG, extend if needed
  - Run centrally supervised by train operators designated by PWG groups
    - Maintained and scheduled by PWG
- At this moment we have set up alpha versions of PWG3 and PWG4 trains (tested in central mode), PWG2 ongoing
- First phase: debugging, fixing leaks, checking CPU and output size
- Second phase: extending/shrinking/splitting trains and starting to operate trains regularly
- Third phase: operating regularly and setting up basic rules for memory limits and inclusion of new wagons, following regularly in Savannah all problems

PWG trains

ID	Tag	Status	Done%	Cfg	Out	Total	Done	Active	Waiting	Runs	Output events	Production description	Comment
813	PWG4_pp_000_LHC10e	Completed	56%			44	25			1 (130850 - 130850)	455,084	PWG4_pp_000_LHC10e: PWG4 analysis train configured	Big leaks, large mem...
802	PWG3_Pb-Pb_000_LHC10h_Stage3	Completed	100%			50	50			50 (137135 - 139314)		PWG3_Pb-Pb_000_LHC10h_Stage3: PWG3 tasks on AODs (di)muon/vertexing/dielectrons_FinalMerging	
801	PWG3_Pb-Pb_000_LHC10h_Stage2	Completed	100%			260	260			22 (137135 - 139173)		PWG3_Pb-Pb_000_LHC10h_Stage2: PWG3 tasks on AODs (di)muon/vertexing/dielectrons_Merging	
800	PWG3_Pb-Pb_000_LHC10h_Stage1	Completed	100%			987	987			55 (137135 - 139314)		PWG3_Pb-Pb_000_LHC10h_Stage1: PWG3 tasks on AODs (di)muon/vertexing/dielectrons_Merging	
795	PWG3_Pb-Pb_000_LHC10h	Completed	97%			3169	3099			71 (137135 - 139314)		PWG3_Pb-Pb_000_LHC10h: PWG3 tasks on AODs (di)muon/vertexing/dielectrons	
	5 productions		98%			4510	4421	0	0				

Setting up trains is ongoing. All analysis groups started to participate, currently more in adding their task configuration to the PWG central train macro.