

ALICE Data Preparation (group)

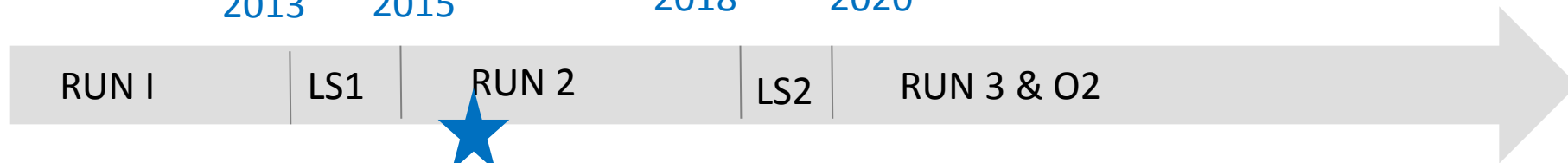
M. Germain

QGP 2017, Etretat, 9-12 Octobre France

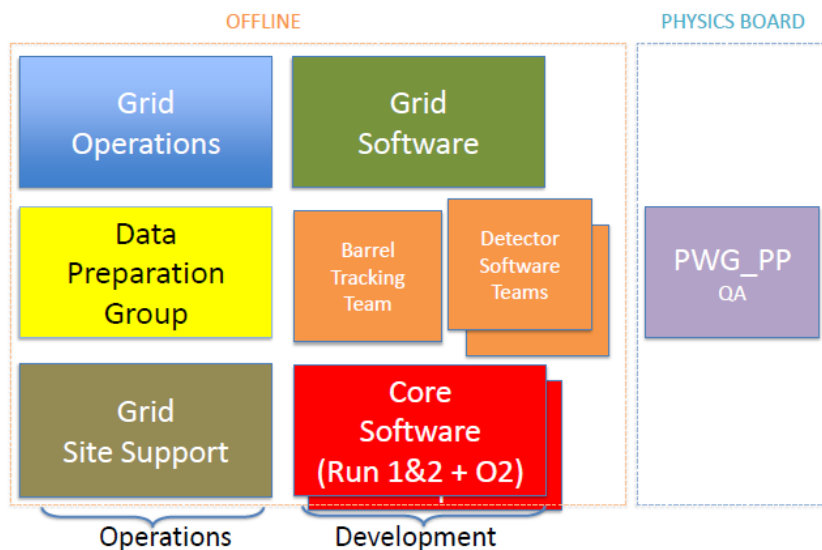
DPG • Data Preparation Group: the birth



2013 2015 2018 2020



★
March 2016: official creation of the DPG within Offline project



C. Zampolli @Alice Offline Week 30 March

“ **Data Preparation Group**: new entity created to organize, plan, verify, certify, monitor the steps of the data processing

→ **DELIVERABLE: a “black box” with usable data**

DPG will take over several of the PWGPP functions

Constraint: continuity and uninterrupted Run2 operation

DPG Data Preparation Group: the birth



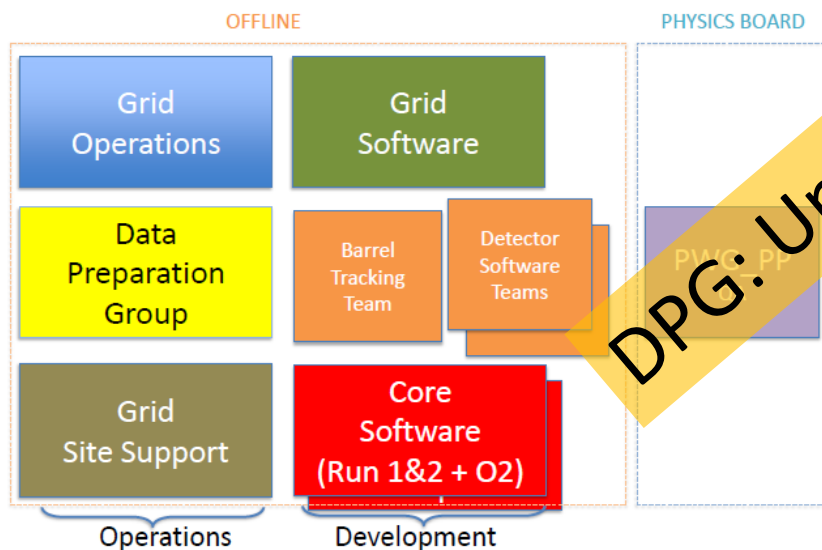
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RUN I

LS1

RUN 2

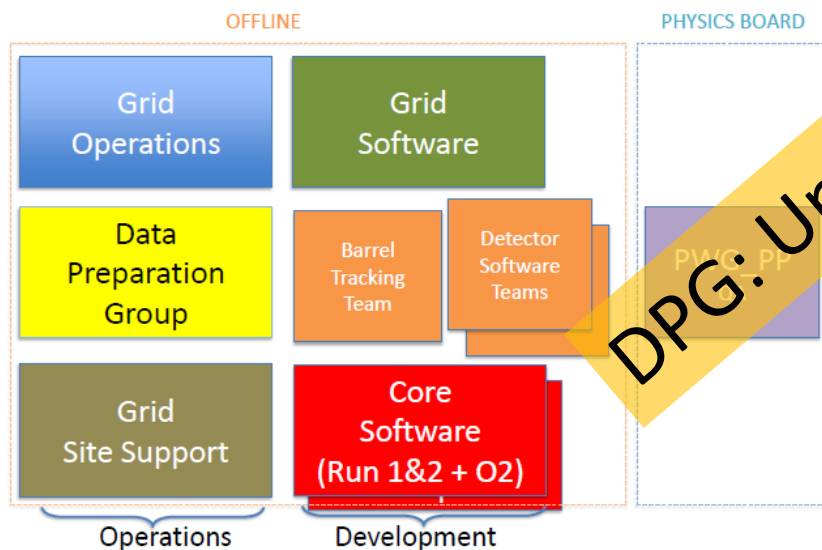
LS2

RUN 3 & O2

★ March 2016: official creation of the DPG Offline project

Data Preparation Group within the Offline Project

C. Zampieri Alice Offline Week 30 March

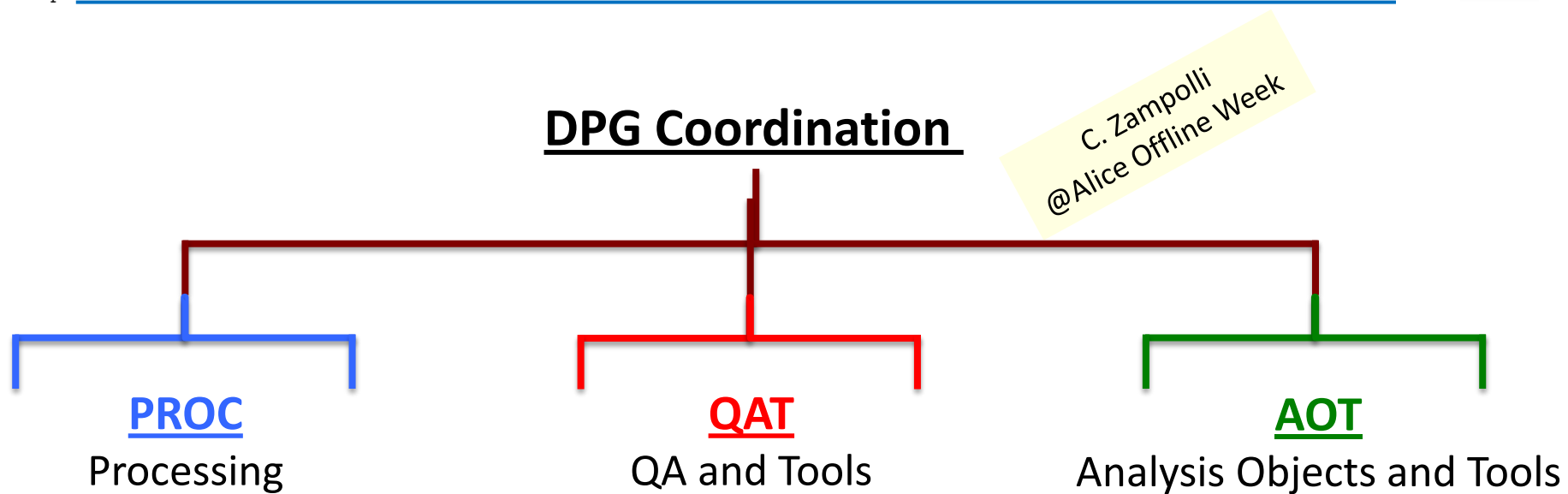


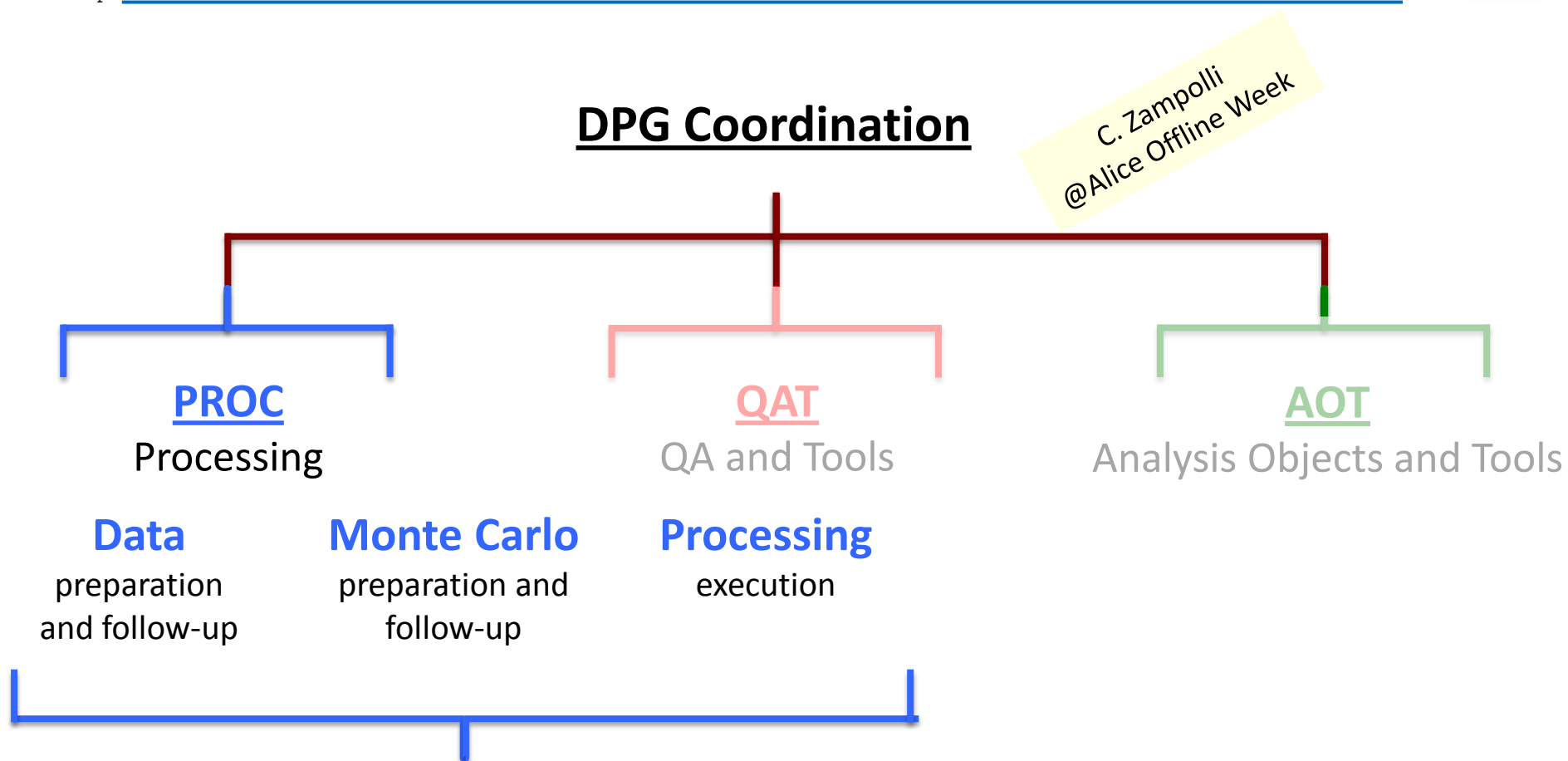
Data Preparation Group: new entity created to organize, plan, verify, certify, monitor the steps of the data processing

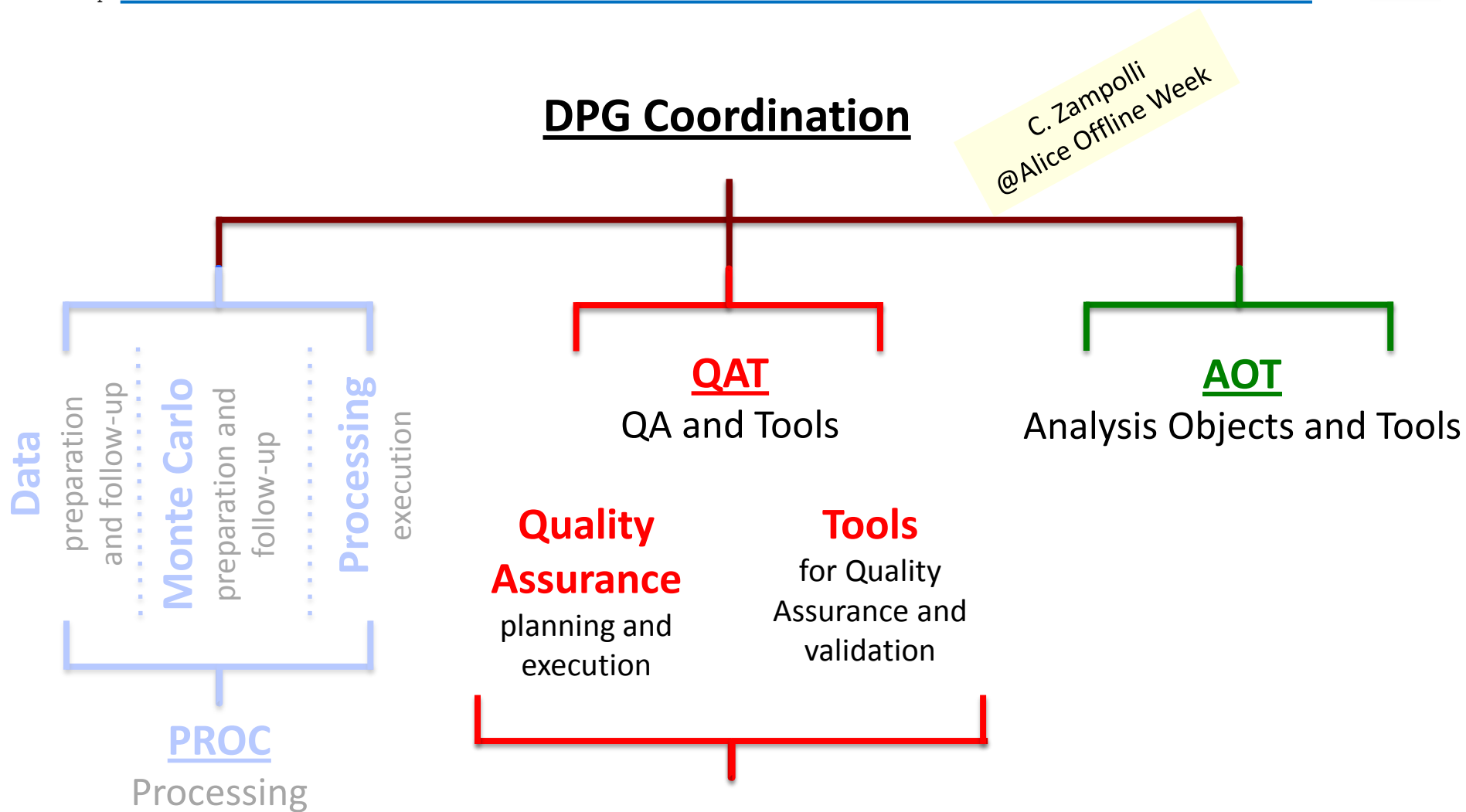
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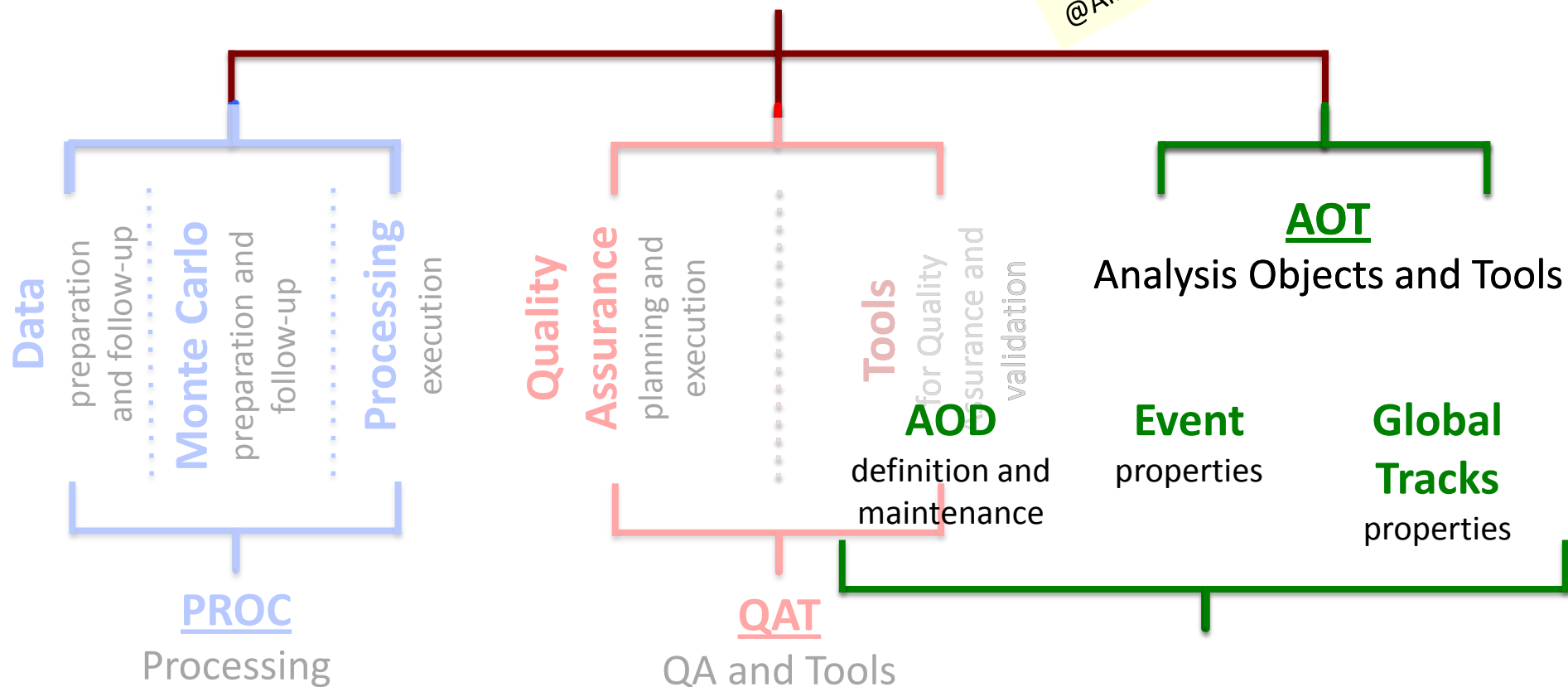






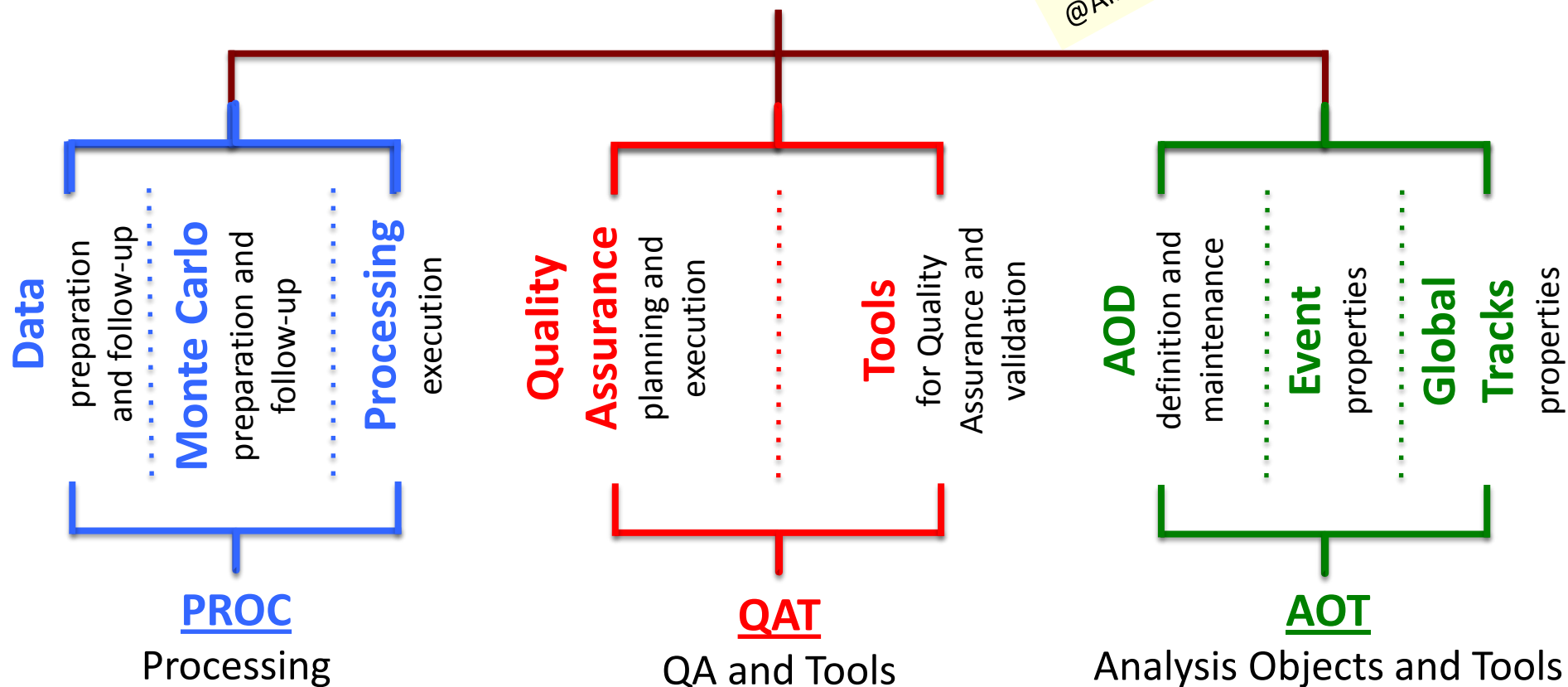
DPG Coordination

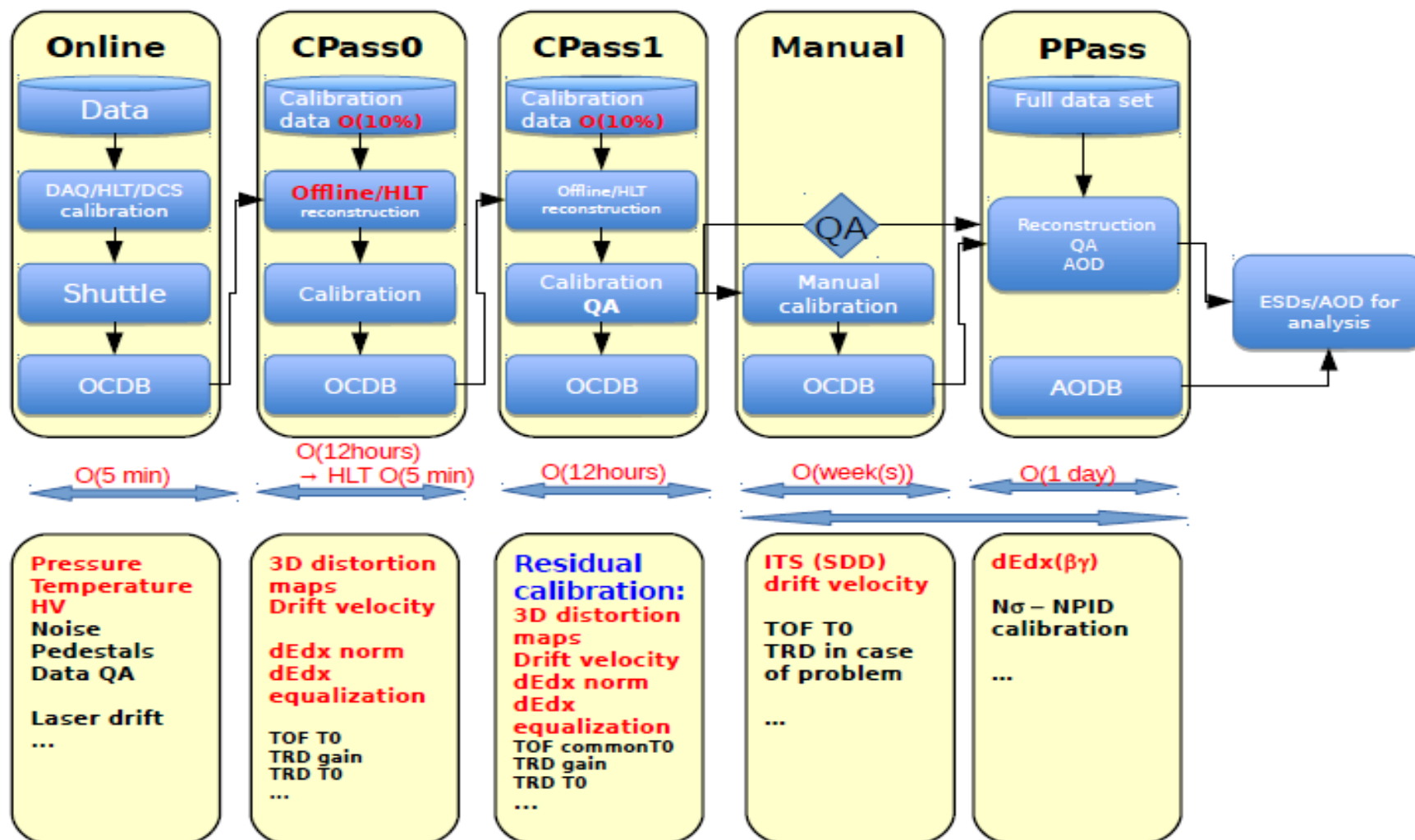
C. Zampolli
@Alice Offline Week

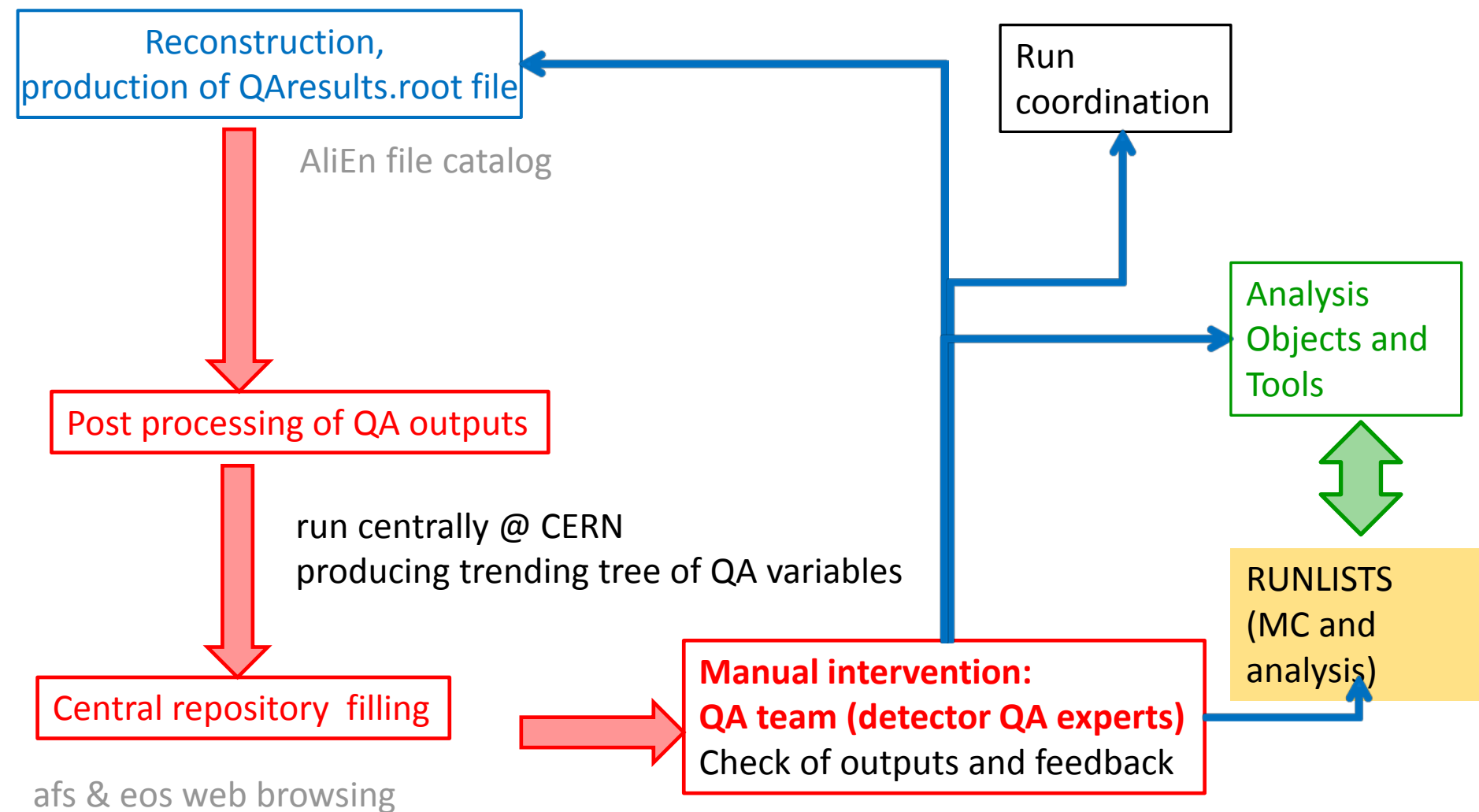


DPG Coordination

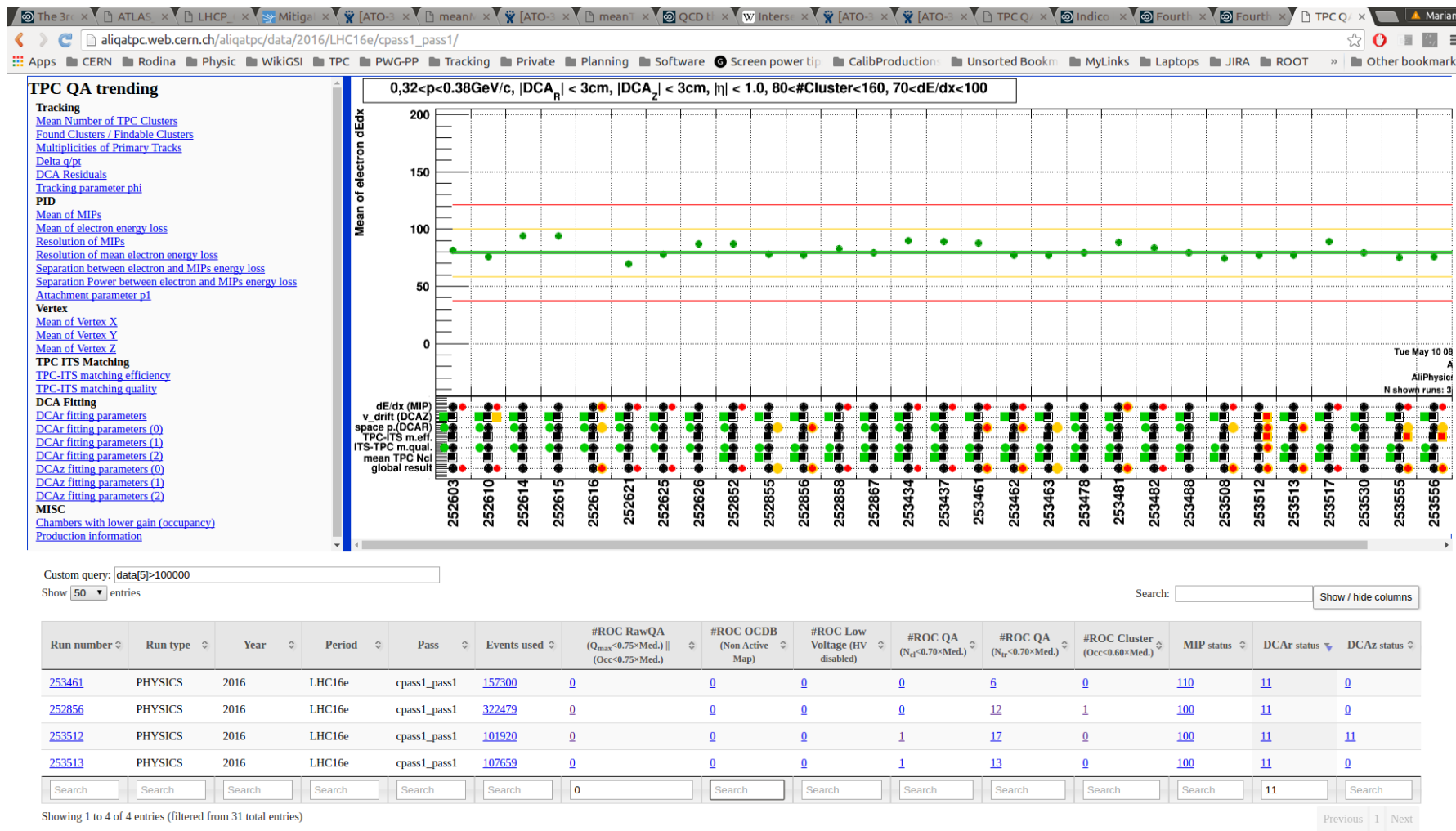
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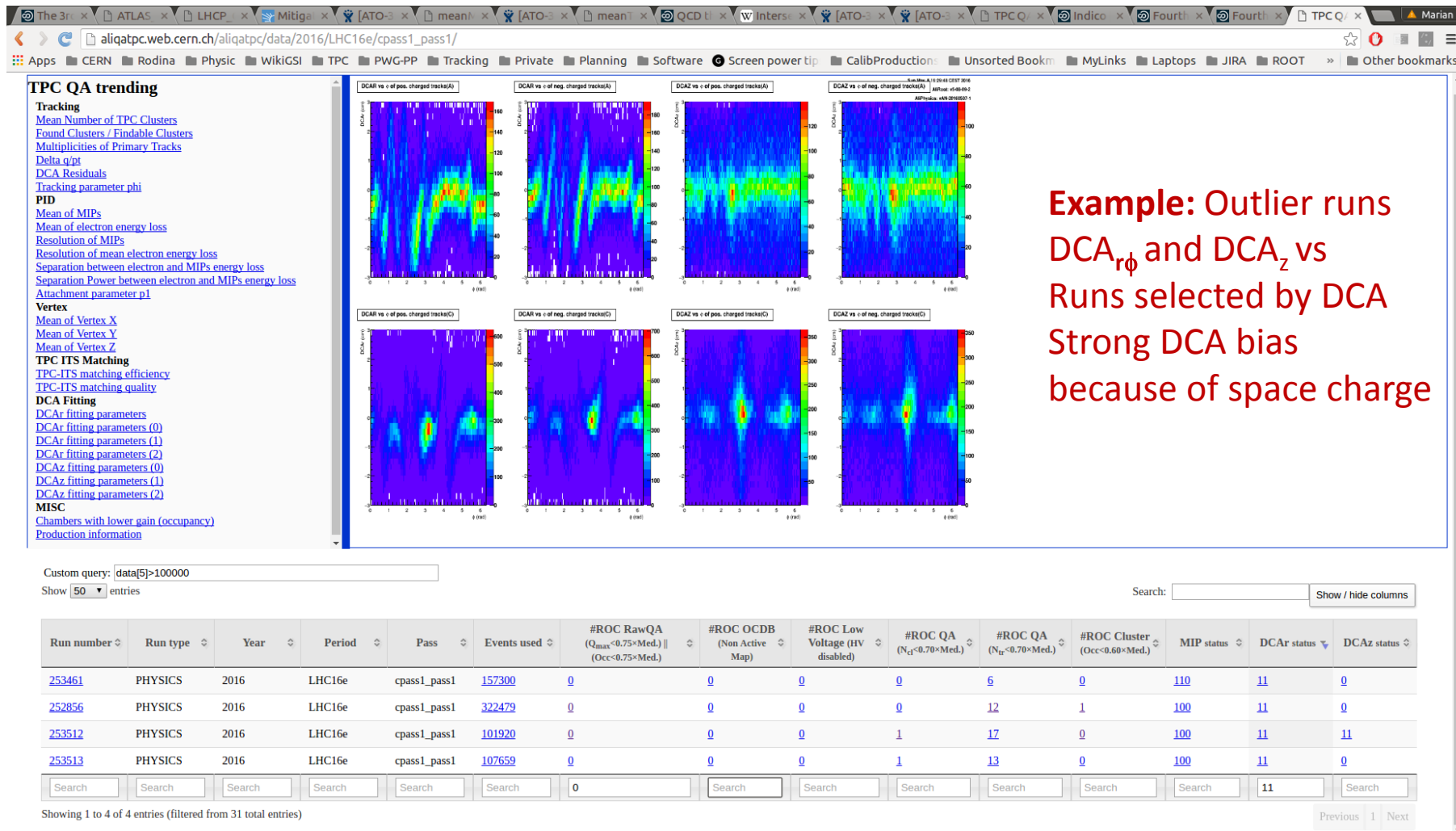






Trending vs run of detector selected variables to spot outliers





Example: Outlier runs
 DCA_r and DCA_z vs
 Runs selected by DCA
 Strong DCA bias
 because of space charge

End of detector QA process
 ➤ Flag in Run Condition Table



From QA information to Runlists

MonALISA Repository for ALICE

My Jobs My home dir Catalogue browser LHC0 Trains Administration section ALICE Reports Alert XML Feed Firefox toolbar MonALISA GUI

Run Condition Table

Twiki page of LHC17s

Beam Bunches Triggers Quality Detectors configuration

Run#	Bunches	Scheme	Fill #	Energy per beam	Intensity per bunch	Mu	BB	BA	BC	MB Interaction	Rate (Hz)	MB Beam-Empty	MB Empty-Empty	Muon Interaction	High multiplicity trigger	EMCAL	Calibration	Global quality	Muon quality	Physics Selection Status	Comment	Field	A C O	A D O	E M D	F M L	H M T	M C P	P T H	S M P	S D S	S O D	T O F	T P C	T R D	T V D	Z D O	HLT mode	Last change		
276508	L	350	25ns_17400_1720_1570_1630_9600_211m	6.106	6.499		1570	170	170	2.180.281	152.21			970.286		251.283							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276507	L	350	25ns_17400_1720_1570_1630_9600_211m	6.106	6.499		1570	170	170	86.538	129.53			43.518		10.021							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276506	L	350	25ns_17400_1720_1570_1630_9600_211m	6.106	6.499		1570	170	170	2.807.859	153.81			1.299.327		323.442							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276500	L	350	25ns_17400_1720_1570_1630_9600_211m	6.106	6.499		1570	170	170	2.088.399	201.76			790.358		187.529							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276482	L	350	25ns_17400_1720_1570_1630_9600_211m	6.103	6.499		1570	170	170	1.591.965	152.71			768.804		184.344							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276461	L	350	25ns_17400_1720_1570_1630_9600_211m	6.103	6.499		1570	170	170	125.081	178.18			47.845		11.106							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276439	L	348	25ns_15480_1536_1396_1458_9600_171m	6.104	6.499		1396	152	152	439.516	136.84			209.203		33.856							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276438	L	348	25ns_15480_1536_1396_1458_9600_171m	6.104	6.499		1396	152	152	385.821	139.89			194.443		48.920							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276437	L	348	25ns_15480_1536_1396_1458_9600_171m	6.104	6.499		1396	152	152	654.669	136.30			340.387		81.028							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276435	L	348	25ns_15480_1536_1396_1458_9600_171m	6.104	6.499		1396	152	152	1.780.877	144.49			854.324		218.296							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276434	L	348	25ns_15480_1536_1396_1458_9600_171m	6.104	6.499		1396	152	152	128.145	176.27			50.419		12.060							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276432	L	348	25ns_15480_1536_1396_1458_9600_171m	6.104	6.500		1396	152	152	507.607	189.76			197.638		47.049							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	1	27 Sep 2017
276429	L	348	25ns_15480_1536_1396_1458_9600_171m	6.104	6.499		1396	152	152	340.798	135.51			172.723		43.998							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	1	27 Sep 2017
276331	L	351	25ns_18320_1820_1745_1820_9600_211m	6.098	6.499		1745	187	187	608.779	142.04			306.333		66.747							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276348	L	351	25ns_18320_1820_1745_1820_9600_211m	6.098	6.499		1745	187	187	257.579	137.74			131.285		28.095							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276312	L	350	25ns_17400_1720_1570_1630_9600_211m	6.097	6.499		1570	170	170	479.501	137.59			209.487		54.874							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276307	L	350	25ns_17400_1720_1570_1630_9600_211m	6.097	6.499		1570	170	170	328.807	153.29			134.065		37.154							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276302	L	350	25ns_17400_1720_1570_1630_9600_211m	6.097	6.499		1570	170	170	687.922	142.99			317.023		75.696							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276297	L	350	25ns_17400_1720_1570_1630_9600_211m	6.097	6.499		1570	170	170	599.404	157.45			269.042									1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276294	L	350	25ns_17400_1720_1570_1630_9600_211m	6.097	6.499		1570	170	170	966.321	147.35			445.304		107.292							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276292	L	350	25ns_17400_1720_1570_1630_9600_211m	6.097	6.499		1570	170	170	1.248.314	158.68			561.836		138.607							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276291	L	350	25ns_17400_1720_1570_1630_9600_211m	6.097	6.499		1570	170	170	581.715	158.38			239.665		63.968							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276290	L	350	25ns_17400_1720_1570_1630_9600_211m	6.097	6.499		1570	170	170	790.348	150.86			375.219		89.407							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276289	L	350	25ns_17400_1720_1570_1630_9600_211m	6.096	6.499		1570	170	170	954.299	148.23			428.076		106.332							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276287	L	350	25ns_17400_1720_1570_1630_9600_211m	6.096	6.499		1570	170	170	70.105	110.05			38.014		8.464							1	X	1	1	12			3	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276230	L	350	25ns_17400_1720_1570_1630_9600_211m	6.094	6.499		1570	170	170	928.435	144.17			462.983		97.603							1	X	1	1	12			3	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276205	L	350	25ns_17400_1720_1570_1630_9600_211m	6.093	6.500		1570	170	170	1.000.877	135.51			506.115		115.906							1	X	1	1	12			3	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276178	L	350	25ns_17400_1720_1570_1630_9600_211m	6.091	6.499		1570	170	170	795.495	137.80			390.974		92.660							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276177	L	350	25ns_17400_1720_1570_1630_9600_211m	6.091	6.499		1570	170	170	253.024	128.90			134.386		27.683							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276170	L	350	25ns_17400_1720_1570_1630_9600_211m	6.091	6.499		1570	170	170	806.676	146.64			395.036		94.630							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	27 Sep 2017
276169	L	350	25ns_17400_1720_1570_1630_9600_211m	6.091	6.499		1570	170	170	592.473	127.28			373.712		67.506							1	X	1	1	12			X	1	1	1	1	1	1	1	1	X	3	25 Sep 2017

Run list creation based on detector flags in RCT;
5 general lists created by DPGQA for analysers:

- Tracklets
- Central Barrel Tracking
- Hadron PID
- Electron PID
- Calo

Recent poll /interaction with PWG to ask for other needs

Analysis QA
Running on all new dataset created



PWG

Analysis Object and Tools

- Definition and maintenance of Analysis Object data (input for all analysis)
 - Follow up of creation
 - Definition of cuts used to create dataset
 - Documentation
- Event properties
 - Event selection criteria: tuning and QA per period
 - Pile-up studies
 - Centrality (calibration, documentation)
- Track Properties
 - Cut studies/ per period
 - Track properties: impact parameter and momentum resolution ..."
 - Evaluation of common systematics due to track cut variations
 - ITS-TPC syst on matching efficiency in pp, Pp-Pb, PbPb 5 TeV used for **SQM, EPS**
 - PID performances

STRONG involmment for analysis preparations

Outcome in GENERAL DPG runlist and instructions for analysers

Provide and develop tools for QA

- Development or tools for automatic comparison of productions: data vs MC, data vs data
 - and release validation.....
- Development of automatic tools for alarm rising
 - Based on histograms/trending outliers
 - Different prototypes development:
 - QA based on Elastic search (<https://www.elastic.co>)
 - ROOT tree based DB (generalization of TPC existing)
 - Overwatch (based on HLT EMCAL Online extended to DQM ongoing)
- Work on aggregating information from different databases
 - logbook, RCT, Online, central QA repositories
 - Visualization/dashboards
- **Deliverable:**
 - Databases to bookkeep productions
 - User friendly tools for querying

ALICE DPG structure and operations in place since 18 month

A large variety of activities covered by the DPG

- Trying to simplify life of analyser
- Providing as much information as possible to the relevant people
- Maintaining documentation up to date

But the “**glue**” should not dry

- Cooperation with [Offline](#), [Detector](#), [PWG](#), [analyzer](#) needed
 - Spot issues, fix them, improvement of the processing

Proc (Processing)

Roberto Preghenella
Catalin-Lucian Ristea (*)
Chiara Zampolli
Michael Weber

DPG Coordination

C. Zampolli
F. Prino

QAT (QA & Tools)

Marie Germain, Elena Botta
Jacek Otwinowski (*)

AOT (Analysis Object & Tools)

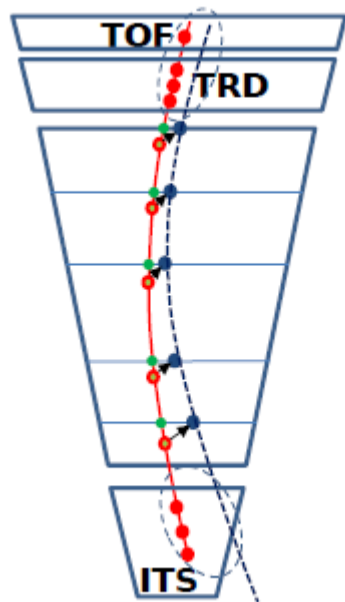
Catalin-Lucian Ristea (*),
David Dobrigkeit Chinellato,
Andrea Dainese & Andrea Rossi (*)

(*) Institutional

M. Germain, QGP France

Space point distortion due to space charge RUN1 $O(1 \text{ mm}) \rightarrow$ RUN2 $O(5 \text{ cm})$

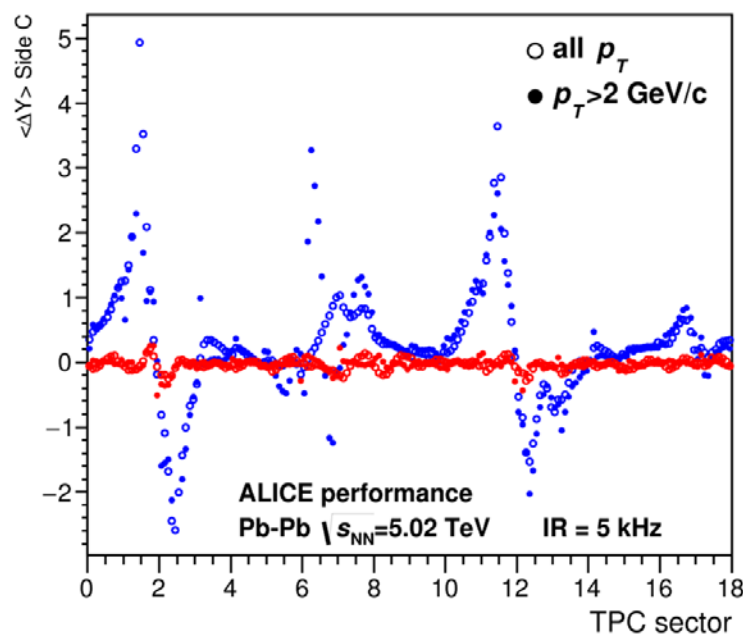
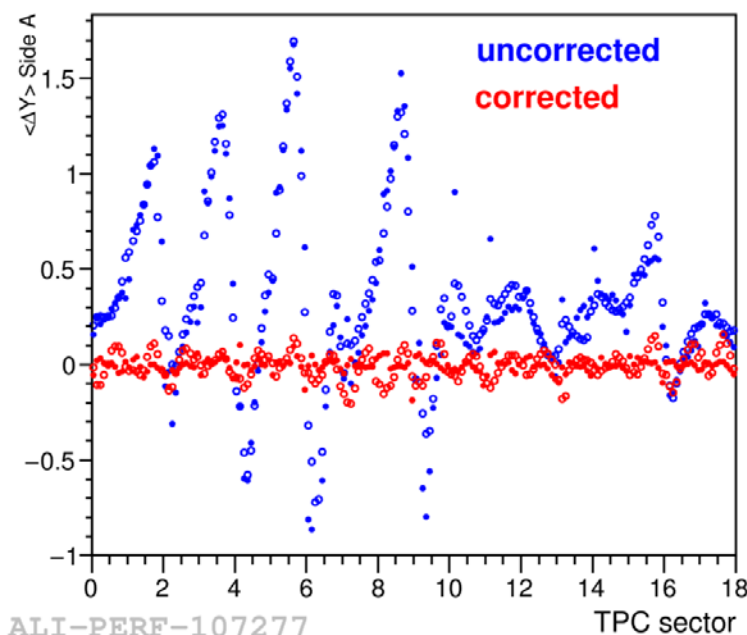
- exchange of gas mixture, increase of interaction rate
- target calibration precision $\sim O(0.2 \text{ mm})$



1. TPC reconstruction with large road-widths to not loose TPC clusters attachment
2. Match to ITS and TRD/TOF
3. Refit ITS-TRD-TOF part and interpolate to TPC as a **reference of true track** at every pad-row
4. Collect Y, Z differences between **distorted clusters** and **reference** points in sub-volumes (voxels) of TPC
5. Extract 3D vector of distortion in every voxel
6. Create smooth parameterization (DB object) to use for correction during following reconstruction
7. Distortions change with time (interaction rate): procedure in short time intervals ($\sim 20\text{-}40 \text{ min}$, restriction by statistics)

Space point distortion due to space charge RUN1 O(1 mm) → RUN2 O(5 cm)

- exchange of gas mixture, increase of interaction rate
- target calibration precision $\sim O(0.2 \text{ mm})$



Mean distortion suppressed below intrinsic resolution.

Impact of distortion fluctuation reduced increasing space point error estimates

➤ Activities to further decrease fluctuation following high frequency fluctuation