

VZERO Status Report

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On behalf of VZERO Group

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Content

- Simulation
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- Trigger
- Geometry
- Shuttle pre-processor & OCDB
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Simulation

- New features being implemented:
 - Correct simulation of TDC response (time offset, readout windows,time slewing)
 - Necessary TDC parameters stored by the pre-processor
 - Corresponding OCDB entries added
 - hits->digits code is being modified
 - New implementation of digits/sdigits (simulating the ADC sampling)
 - ADC response function is being extracted from the data
 - Code modifications will follow
- The final goal is to be able to simulate the detector response with RAW OCDB

Reconstruction

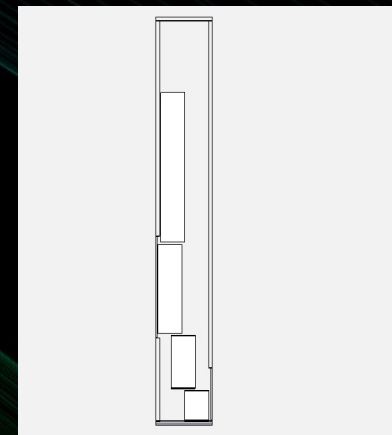
- Reconstruction parameters were added and actually already used
- Reconstruction was modified by introducing a proper pedestal subtraction, noise removal and summing of total charge over ADC samples
- To do:
 - Introduction of TDC time offsets
 - Correction for time slewing
 - Produce average time per side (A/C) and attribute beam-beam, beam-gas and empty flags to the reconstructed events
 - The necessary OCDB entries are there, the code is already implemented in an analysis class (AliTriggerAnalysis)

Trigger

- Brand new trigger simulation by Raphael
- All the trigger inputs to CTP are simulated
- All trigger related DCS data points are stored in Trigger/Data OCDB entry
- Once we put the correct digitization in the simulation, the trigger simulation should be quite realistic
 - And it will be possible to simulate the trigger with RAW OCDB entries

Geometry

- V0C:
 - Corrected longitudinal position of the rings
 - More detailed description of the container box
- V0A:
 - Geometry was cross-checked



Shuttle Pre-processor

- Main problem last year:
 - Lowering of HVs by the DCS shifter before the DCS 'run completed' signal
 - As a result channels declared 'dead', no data reconstructed
 - OCDB entries for affected runs recovered manually, many thanks to Chiara & Raffaele!
 - Long discussions with DCS, should not happen again
- Some additional TDC parameters are retrieved from DCS archive
 - Needed for proper time info treatment in hits->digits and for moving code from 'analysis'->reco
 - Presently in test shuttle, will be moved to P2 as soon as validated

OCDB

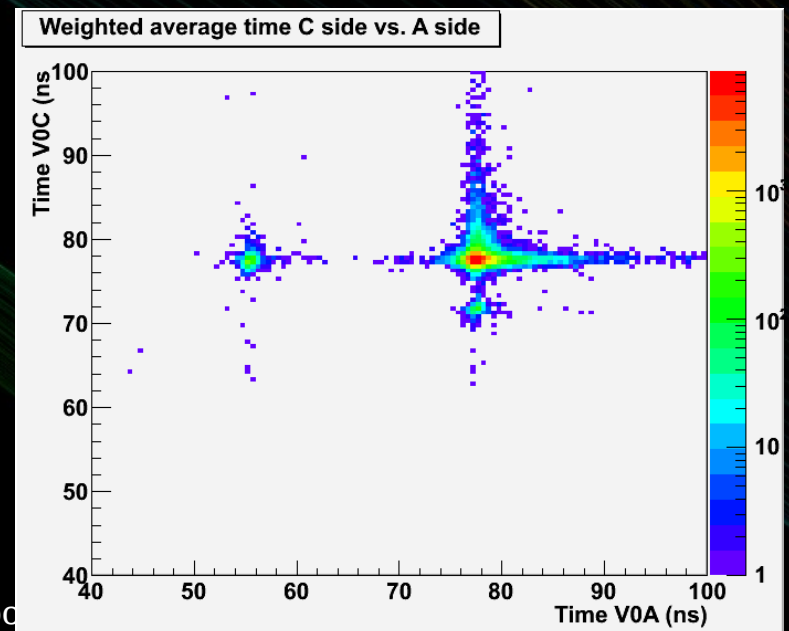
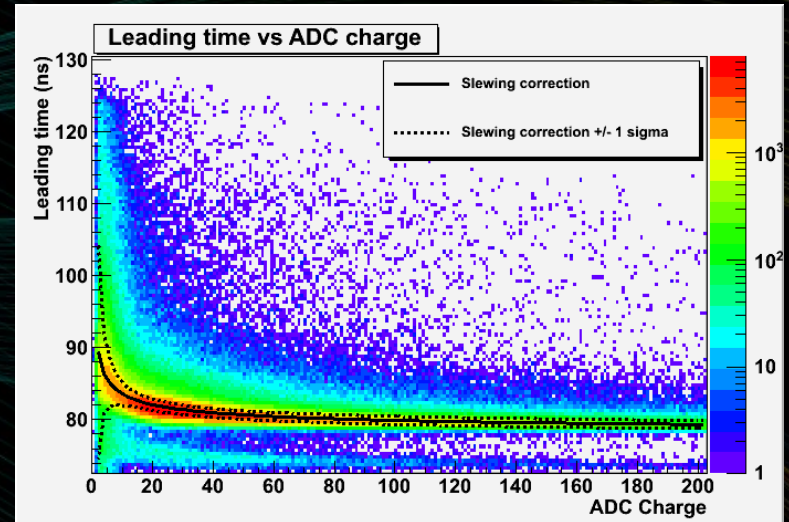
- TDC info added to Calib/Data object
- New OCDB entry for time-slewing (TF1)
- New OCDB entry for time misalignment of channels

Quality Assurance

- To do:
 - Extract reference QA for both MC and data
 - Improve QA checker

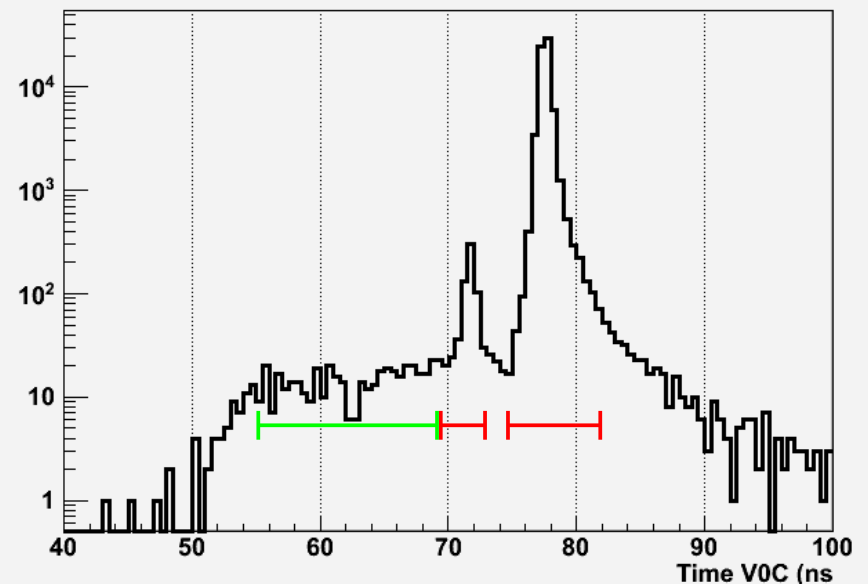
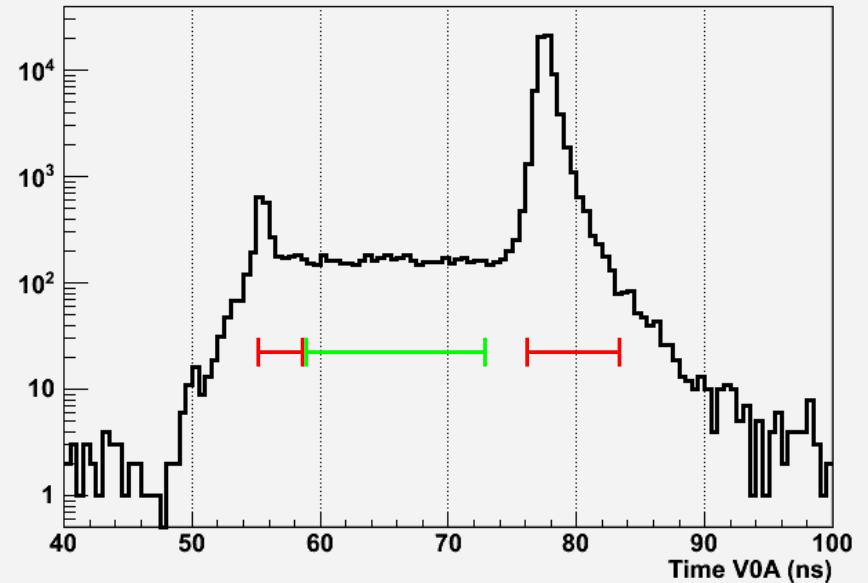
Analysis of collisions data

- Time alignment channel-by-channel
- Time-slewing:
 - $t \rightarrow t - \alpha A^\beta$
where A - ADC amplitude
- Weighted average time on each V0 side (A/C)
 - $\sigma_i^2 = \sigma_0^2 + (\gamma A^{\beta-1})^2$
where $\sigma_0 \sim 550$ ps
 - $T_{A,C} = \frac{\sum t_i / \sigma_i^2}{\sum 1 / \sigma_i^2}$



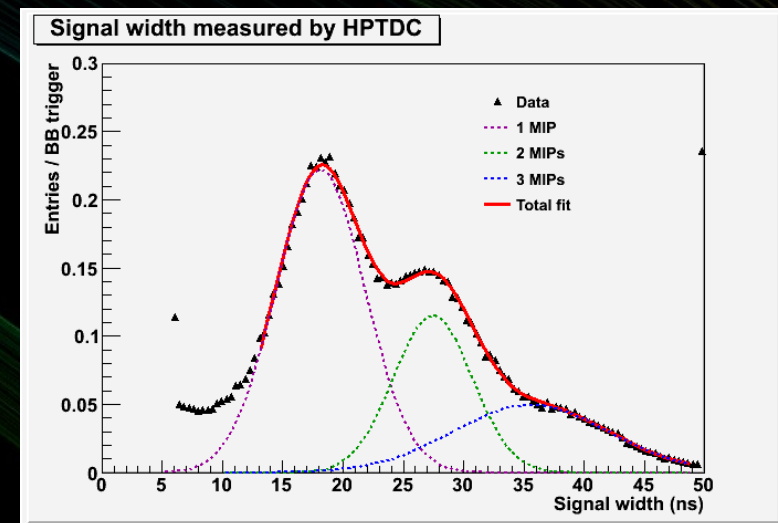
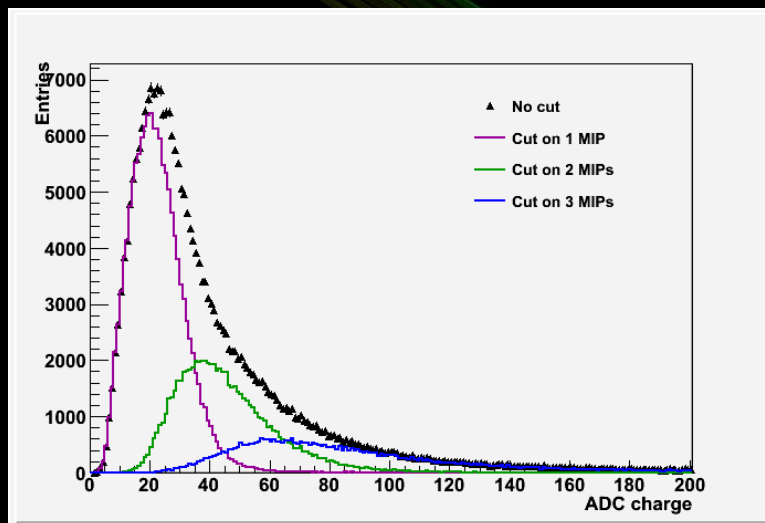
Analysis of collisions data

- Events are attributed beam-beam, beam-gas, empty flag on each V0 side depending on the average time reconstructed
- Flags used to distinguish p-p from background events



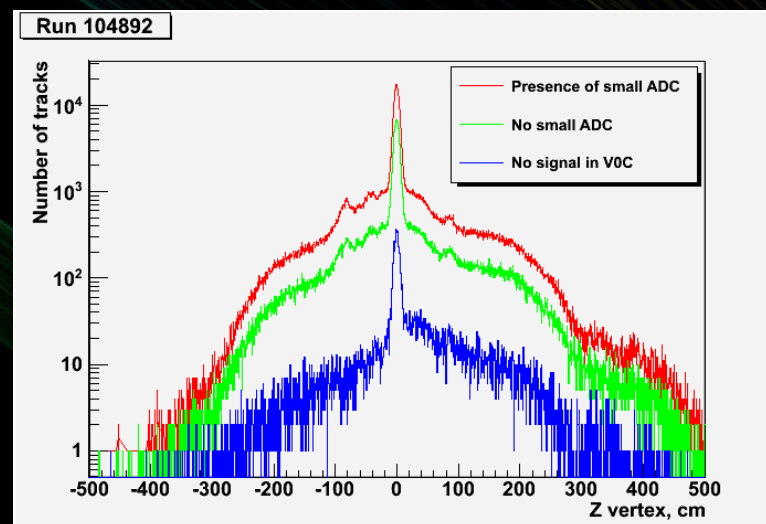
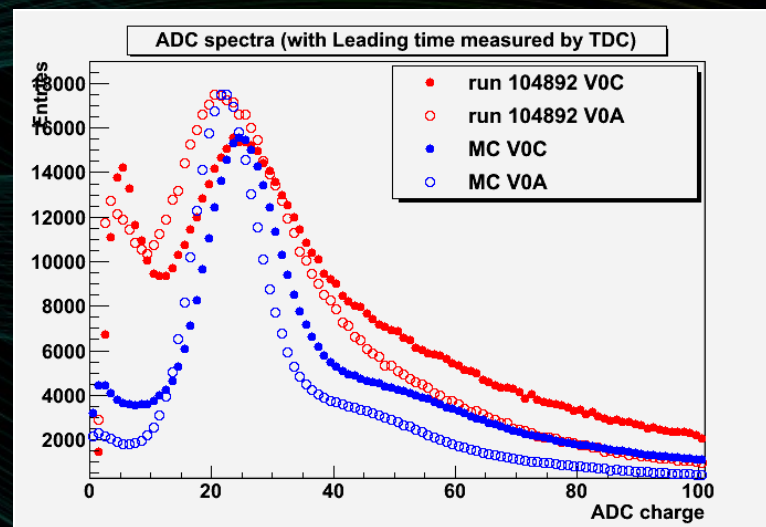
Analysis of collisions data

- Identification of one or several MIPs as seen by TDC by using measured signal width (above threshold)



Analysis of collisions data

- Some discrepancies in ADC spectra between data and MC
- Excess of small ADC amplitudes in the data are believed to come from secondary tracks and edge effects
 - All other possible explanations were ruled out in the analysis
 - The main source of secondary on C side is the inox flange just in front of the rings (-82 cm)



Planning

Pin	Log	P	Work	Task Name	Task Owner	Assigned Users	Start Date	Done Date	Expected Finish Date	Last Update
	Log		✓	↳ Alignment (1147)	Brigitte.Cheynis	-	01/01/2006	09/07/2008	18/09/2008	-
	Log		✓	↳ Calibration (1151)	Brigitte.Cheynis	-	01/01/2006	26/05/2009	30/05/2009	-
	Log		✓	↳ Reconstruction (1157)	Brigitte.Cheynis	-	01/01/2006	19/10/2009	30/05/2009	-
	Log		▶	↳ Simulation (1160)	cvetan.cheshkov	cvetan.cheshkov (100%)	01/01/2006	-	31/05/2010	-
	Log		✓	↳ Implementation of track references (2492)	Brigitte.Cheynis	Brigitte.Cheynis (100%)	16/03/2009	30/05/2009	30/05/2009	-
	Log		▶	↳ Handling of the time information from hits during digitization (2489)	cvetan.cheshkov	cvetan.cheshkov (100%)	16/03/2009	-	31/03/2010	-
	Log		▶	↳ Accounting for detector response in the time information stored in digits (2490)	cvetan.cheshkov	cvetan.cheshkov (100%)	16/03/2009	-	31/03/2010	-
	Log		▶	↳ Propagation of labels from kinematics tree for Hits, Sdigits, Digits (2491)	cvetan.cheshkov	cvetan.cheshkov (100%)	16/03/2009	-	30/04/2010	-
	Log		▶	↳ Verification of the event merging procedures (2493)	cvetan.cheshkov	cvetan.cheshkov (100%)	16/03/2009	-	30/04/2010	-
	Log		▶	↳ Correct treatment of the detector signal in the sdigits for event merging (2494)	cvetan.cheshkov	cvetan.cheshkov (100%)	16/03/2009	-	30/04/2010	-
	Log		▶	↳ Verification of the embedding procedures (2495)	cvetan.cheshkov	cvetan.cheshkov (100%)	16/03/2009	-	31/05/2010	-
	Log		▶	↳ Quality Assurance (1403)	Brigitte.Cheynis	-	01/01/2006	-	31/05/2010	-
	Log		▶	↳ Reference distribution (2327)	Brigitte.Cheynis	Brigitte.Cheynis (100%)	23/05/2008	-	31/05/2010	-
	Log		✓	↳ Implementation of reconstruction in QA checker (2501)	Brigitte.Cheynis	Brigitte.Cheynis (100%)	16/03/2009	30/05/2009	30/05/2009	-
	Log		✓	↳ Implementation of run type (2499)	Brigitte.Cheynis	Brigitte.Cheynis (100%)	16/03/2009	04/03/2010	31/01/2010	-
	Log		▶	↳ Implementation of simulation in QA checker (2500)	Brigitte.Cheynis	Brigitte.Cheynis (100%)	16/03/2009	-	31/03/2010	-
	Log		▶	↳ Implementation of reference data (2502)	Brigitte.Cheynis	Brigitte.Cheynis (100%)	16/03/2009	-	31/05/2010	-
	Log		▶	↳ Extract QA data from large Monte Carlo production (2655)	Brigitte.Cheynis	Brigitte.Cheynis (100%)	08/07/2009	-	31/03/2010	-
	Log		✓	↳ Implement method virtual Double_t * Check(AliQAV1::ALITASK_t /*index*/) (2671)	Brigitte.Cheynis	Brigitte.Cheynis (100%)	27/07/2009	15/10/2009	31/12/2009	-