**Minutes of the Coral-weekly meeting, 04/07/2018**

Communications:
- Test-production for RICH (2017-hadron beam) is over; RICH-group is looking into the results.
- P07-t5 production (new BPCs, ECAL calibs, etc) is also over.
- Test production for DY-2018 trigger-efficiency studies is in the pipeline
- New CVMFs repository for root-geometry, detectors.dats, calibrations etc. (all auxiliary inputs) was requested.
  - The idea is to leave /cvmfs/compass.cern.ch for productions and minimize number of transactions
  - We have to see how to deal with calibration-files (many thousands of files) on CVMFS, the number of files can be a problem e.g. we have limitations on number of files per AFS-volume (64 k?)
  - For calibrations we have to see how to organize the synchronization (of mapping files, calibrations) between COMPASS-online-machine (COMPASS-network) and CVMFS. Vladimir Frolov to be contacted.
  - Another repository may be requested for MC-production directories
- BMS calibrations problem was fixed. The calibrations (BPCs) and supporting histograms where produced by Elena and inspected by Pawel.
  - Momentum definition is done based on MC-parametrization which uses a set of tracks and corresponding patterns matching the given hit set to MC patterns. The questions is how reliable is this approach in case of some instabilities (instabilities are not taken into account in MC-patterns).
  - One could check the correspondence between momentum measured by SM2 and BMS and verify SM2 tracks momentum reconstruction looking at e.g. $K^0$ mass. The problem is that for beam tracks in SM2 the statistics will be very small.
  - Energy loss of beam in target is about 0.1 GeV (Nicolas, MC).
  - Andrei is working on beam-files.
- Request to Artem Ivanov to apply UE11 (DPS studies) to MC-data and compare resolutions, residuals and efficiencies (MC vs. RD). Last year Artem has produced Albert's plots (3D pseudo-efficiencies) for MC.
- Sergei implemented new CORAL New option to calculate "smoothing" parameters on tracks had been introduced ("smoothed parameters" means "best estimator of track parameters"). Main difference introduced is that track parameters on detector's plane are calculated <u>excluding</u> measurement (hit) on this plane (if the track has it). In this case any residuals "track-hit" will be less biased.
- ROOT-geometry file naming should include run number and revision number of corresponding detector.dat
- In order to start DY-2015 test production for trigger efficiencies dico files is missing (dipole), Catarina will take care. Solenoid dico is available, but we need dico for dipole (even if the difference may have no impact).

1) **Renat – alignment 2018**
   - Some updates for Straws and pMMs (V-alignment by Yann)
   - New alignment-file is expected to be released soon

2) **Vladimir Kolosov – calorimeter positions**
   - Calorimeters positions in det.dats were checked for 2012, 2014, 2015, 2016 and 2017. Some misalignments were identified (in particular HCAL2, ~6 cm in 2016).
   - All 2016-2017 det.dats and root-geoms should be updated/corrected before we start new production

- Another issue is that in 2016 there is a mismatch (~6 cm, X coordinate only) between cluster position and extrapolated track-position for HCAL1. The issue manifests only for muon tracks and is not present in 2017.
- In principle we have somewhat low pseudo-efficiency for MWs in 2016 and 2017, which might be an indication of misalignment, but it is difficult to imagine a misalignment of ~6 cm and moreover pseudo-efficiencies are of the same order across 2012-2016-2017.
- One question is if the extrapolation is done correctly, but why is it OK for 2016 and 2017.
- Muon wall positions between 2016 and 2017 are very close (Elena), not clear why the shift is present only in 2016.
- Request to check this issue for 2012, 2015 and 2018 and to plot in 2D.
- HCALs were not in the reconstruction in 2015 (because calibrations were missing?). Request to investigate/fix this issue for DY2015 and DY2018. Probably the issue was related to ECALs and all calorimeters were disabled. ECALs where off in 2015, so we need to get back only HCALs.

3) **Riccardo – pseudoefficiencies**
   - A bug related to description of outer part of Straws in MC was found and fixed
   - Efficiency maps were produced for all detectors (1 good run from W07 and 1 from W12). All maps were discussed with the experts and approved.
   - The idea was to select a good run for the test looking into logbook, but Riccardo has made an unfortunate choice of a run with several non-working GEMs.
   - Some structures in the efficiency maps of DCs (U-planes and not V) around the dead zone (less prominent in W07). The origin is not really clear (maybe hardware, tracking?).
   - RichWall, looks better from W07 to W12 (gas flux was adjusted in between), the precision looks really nice.
   - W45, problem with some dead zone positions (alignment issue).
   - Some inefficient regions for GEMs (aging effects?), some structures are visible (spacers?) to be clarified with the experts.
   - One should discuss with Kamil the structure of Straws in MC (spacers, constraints inner/outer). By now the precision is about +/- 5 mm.
   - Muon Wall. Binning can be improved (take more finite binning). Dead zones positions should be adjusted.
   - Pixel-MMs (st 03) v-alignment to be improved.
   - Straws – some efficiency variations along the straws, which can be related to temperature deformations of Straws?
   - More statistics is needed and some smoothing is needed for "low statistics" zones (T-bro recipe?).
   - General Summary: some alignment refinement is needed; Riccardo will share the list of problems with Robert.
     - Plan for the efficiency campaign is to select couple of spills from each run and produce overall efficiency map for each period.