

TRT SW Status and Plans

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Atlas Offline SW Status

- In the last few months, there has been lots of activity on the Atlas offline software:
 - Data Challenge 2 phase 1 is largely completed with more than 10 million simulation and calibration events generated.
 - Still digitizing some of simulation events.
 - Almost no problems were caused by GEANT4 / Simulation code.
 - Approximately 276000 jobs run.
 - The Tier-0 exercise has been started (pile-up at CERN).
 - Will be completed in January.
 - The next big push will be to produce events for the Rome Physics workshop in May.
 - Releases 8.7.0, 8.8.0, 9.0.0, 9.0.1, 9.0.2, and 9.2.0 have been built and 9.0.3 will be built.
 - The rate of releases is about 2 every 3 weeks.
 - The new Tracking package (Markus, Ed, Maria, et al.) is implementing the findings of the reconstruction task force.

TRT Offline Status

- The last few months have been very busy for the CTB code but pretty quiet for the offline TRT code.
- The main news items are:
 - Yura Zalite has been in the hospital.
 - I wish him a speedy recovery!
 - Thomas Kittelmann has become the contact for TRT_GeoModel, TRT_PAI_Process, and TRT_TR_Process.
 - Thomas will do the day to day maintenance on the PAI and TR packages but any substantial changes to the TR code will require help from Mogens.
 - Jakob Nielsen is pursuing a career in banking and is no longer working on the the TR model.

TRT Geometry

- In the simulation, the TRT barrel was rotated by 180° about the Y axis.
 - Thomas has put code to correct this into the TRT detector description.
 - By default the correction is not activated and we must turn it on before we start the production for Rome.
- Thomas also modified the TRT detector description so that the parameters could be read from Oracle instead of Nova.

TRT Material

- We are going to have to redo all of the material estimates for the TRT services in both the barrel and the end-cap.
 - Portions of my spreadsheet are hopelessly out of date.
 - It was suggested to move the fuses out of the the detector volume by introducing new cables.
 - From the material point of view this change either bad or worse and I would strongly discourage it unless all other possibilities fail.
 - It will take substantial effort from the engineers and electronics groups to get together the necessary information.
 - I estimate several weeks of effort are required.

TRT Digitization (I)

- The main changes by Andrei and Yura:
 - The possibility to scale the r-t relationship linearly has been implemented to allow compensation for field on/off and for new/old gas mixture.
 - the default is a scale of 1 - i.e. no scaling and corresponds to $B = 0$ T.
 - Linear scaling is not really appropriate as Peter C's studies show that the function has a somewhat different shape with the field on and off.
 - The r-t relationships for the new and old mixtures supplied by Peter C. were put in.
 - Need to check that these relationships go into the release used for the Rome production.
 - The HV used in the model was corrected from 1830 V to 1530 V.
 - Need to remember to put this tag into the release used for the Rome production.

TRT Digitization (II)

- The main changes by Andrei and Yura continued:
 - The possibility to do multiple bunch (TOF) pile-up,
 - Previously only one bunch crossing was possible.
 - A small shift to avoid negative drift times was introduced.
 - The TR photons can be tagged with the particle ID -22 to distinguish them from other soft photons.
 - The -22 code is only visible privately within the TRT code and not visible to users of the public code interface.
- Thomas also made contributions:
 - Thomas' translation of Pavel's PAI code is now available in the TRT digitization by setting a switch.
 - The default remains the GEANT4 PAI model.
 - Using the this code would break the dependence on GEANT4.
 - Thomas also made an attempt to introduce the affect of diffusion in smearing the r-t relationship but it's not in use.

TRT Conditions Database

- Rasmus and Peter H. worked out a way to store TRT drift time information and alignment data in the conditions database.
 - Rasmus wrote the package TRT_DriftCircleOnTrackTool to facilitate this work.
 - Further work remains to finish this.

Future SW Work During Installation

- There are many jobs requiring new software during the installation and early running with cosmic rays:
 - r-t calibration constants need to be calculated and stored.
 - Alignment constants need to be calculated and stored.
 - DCS needs to control and monitor the HV system, gas system, temperatures, etc.
 - The DAQ code to readout the TRT and form the ByteStream data needs to be written.
 - Monitoring code needs to be written and interface to Athena.
 - Need to debug the reconstruction of tracking finding and fitting.
 - The Atlas Event Display will probably need code to display the TRT correctly.
- Now is the time to move people from construction into software.

Final Points

- We need to check very carefully that all of the corrections for the new gas mixture, geometry, etc. are in the version of the code run for the Rome workshop.
- We must not underestimate that amount of work required for the installation and startup.