

Minutes TAG 2 Tracking Phone Conference 21/02/2006

present: K.-T. Brinkmann, P. Gianotti, B. Ketzer, J. Ritman, L. Schmitt, F. Hügging

excused: J. Symrski

not-present: M.-P. Bussa, S. Neubert, M. Steinke

Top 1: Discussion on 'Tracking Requirements'

One main point of the TAG is the definition of the tracking requirements. It was agreed that the requirements should be driven by the needed performance of PANDA to reach the physics goals. Unfortunately the physics simulation framework is not able to provide this information right now and it will most likely take half a year or more to reach this point. All present TAG members express their concern about the progress of this important work.

However, output of the TAG is required on an earlier timescale (roughly end of this year), so it was decided to work out the requirements for each tracking sub-detector (MVD, STT, TPC, MDC, Muon) based on experience, reasonable assumptions and best knowledge of the state-of-art detector technology. The requirements should address pure tracking like space and vertex resolutions as well as more 'technical' requirements like material budget, radiation damage and so on. It is clear that these requirements cannot be as detailed as required; for instance the space resolutions requirement for a given physic channel may provide an acceptance variation, too. Therefore the collected requirements will serve as a starting point for further iterations which also include simulation work either done in the new framework or standalone for specific sub-detectors like already done e.g. for the MVD or the TPC. Task of the TAG is then the evaluation and updating of these requirements during the next months. Every member of the TAG is asked to provide their input to the requirements for the tracking detector they work on based on the circulated document draft.

Furthermore so called 'global tracking' requirements has to be identified which reflects the overall tracking performance of PANDA in terms of space, vertex and momentum resolutions. It was recognised that the PID TAG influences our work here because the need and methods of particle identification has a certain impact on the global tracking requirements. Unfortunately this TAG has not started work and therefore Lars should keep watching this so we could hopefully expect some input on a reasonable timescale.

First corrections and improvements to the document have been given and will be included soon by Fabian. Among these are the time resolutions for the TPC and STT, the double hit resolution for the TPC and others.

Top 2: Discussion on 'Design Choices and Criteria'

The timeframe for the design choices to be taken is still not settled but it is clear that it will not be within the next year; it might be until the TDR or even later. In this case both options have to be described and the way how come to a final decision. It was pointed out that this procedure may drive a cost issue since PANDA construction money will be used possibly for competing detector R&D. On the other hand many groups apply for extra money dedicated to R&D so no CORE PANDA money needs to be spent. A first list of design choices is given in the document and will be re-iterated in near future; suggestions and correction from TAG members are welcome.

Concerning the criteria given in the document several issues has been raised which should be included. Mainly a real physics driven wish for the z-resolution of the central tracking device is needed because this has enormous influence on the (various) decisions of the detector technology (double-sided readout straws vs. skewed straws vs. time projection chamber). Other criteria was also mentioned, in particular to the 'technical feasibility of the concept' section which incorporate the readout technique, mechanical issues, cooling issues, PID and beam pipe issues. This will be included in the next draft of the document.

Jerzy informed prior the meeting about the MDC plans to come to a decision of the detector design. Currently a beam test of the different design options at Juelich is under preparation which hopefully will take place in late summer.

Top 3: Discussion on 'Milestones'

A detailed discussion about the given milestones was postponed. Lars announces the possibility of a 'TDR-like' report in two years from now on which will cover the entire PANDA detector and will describe as much of the technical design as possible including pending design options. The final TDR for each sub-detector will then follow and should mark the end of the design phase. Jim pointed out that such a procedure could increase the work load of the detector developers and contradicts to pressure given by the FAIR project because the schedule for it has already been compressed.

Top 4: Further questions to the document

Several items not yet addressed in the document have been mentioned. Lars raises the point about matching of different tracking devices; especially the question whether a matching of Muon tracking with other tracking devices is necessary and if yes how it is been done. But also the question how the main tracking devices in the central and forward tracker are matched is not fixed.

Kai and Fabian mentioned the need of a repository containing reference and boundary data of each sub-detector to avoid clashes and interface problems. This repository should not only include detector volumes but space for routing electrical and mechanical/cooling services too since this is of particular importance for the inner detector components. Lars informed that this is currently under construction and will be addressed by the Integration TAG.

The issue of backing out the beam pipe was discussed shortly since this may influence the operation of silicon detectors inside the MVD which are quite sensitive to high temperature for longer periods. Lars agreed to provide further information about the time and temperature profiles required for these beam pipe heating periods.

Top 5: Any other business

The next meeting will take place during the Dresden PANDA week on Thursday 08/03/2006 from 18:00-19:00 in room ASB 114.

FH, 02/03/2006