



Forschungszentrum Jülich
in der Helmholtz-Gemeinschaft



TAG - Tracking

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TAG Tracking

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Status

- Definition of benchmark channels Done
- Discussions on requirements and simulation questions for each sub-detector
 - MVD Done
 - MDC Done
 - STT Done
 - TPC Done
- Design choices, definition and procedure.
 - MDC design1, MDC design2 or Straws Done
 - TPC – STT still to be done
- Milestones towards TDR started



Concluding document

New draft exist now (version 2.5)!

- can be downloaded from Wiki page
 - <http://wiki.gsi.de/cgi-bin/view/Pandataagtrk/DraftVersion>
- MVD chapter concerning requirements & simulation question included
- Need now chapters for FT and CT
 - 2-3 pages summarizing the detailed presentation
 - need volunteers for that!
- Chapter concerning the global tracking performance
 - describe/define the final tracking goals of the entire system in terms of the central FoM
 - could be more software oriented
 - I will present a draft soon ...



Concluding document (cont'd)

Open questions:

- How to address the discussion about the forward tracking inside the Target Spectrometer?
 - must be mentioned but can't be discussed in detail since no concrete proposal exist and won't be until a couple of months.
 - propose to keep the current layout and mention that s re-design of the area will be done in the next future (in the FT chapter); see later.
- Milestone chapter is still a little bit vague due to the uncertainties of the PANDA schedule
 - Changed the date according to the recent discussion but it is still unsatisfactory

Propose to prepare the next (hopefully close to final) draft within the next 6 to 8 weeks!!



Criteria for CT decision

- We agreed that the FoM for the performance of the two CT options must be the same → proposal:
 - (1) Point resolution vs. θ , p_T for single tracks, for D_0 , K decay vertices and for hyperon decay vertices.
 - (2) Momentum resolution vs. θ , p_T for single tracks and hyperons.
 - (3) Reconstruction efficiency for single tracks and hyperons.
 - (4) Reconstruction efficiency & purity w/ pile-up and realistic background conditions for single tracks and hyperons.
- Need of course more criteria also covering the feasibility of the detector concept and the feasibility of detector production and maintenance.
 - Remind here on the criteria listed in the TAG document proposed at the beginning of our work:



Criteria for CT decision (cont'd)

- Sufficient performance to reach the requirements driven by the physics goals of PANDA, in particular:
 - Space and vertex resolutions.
 - Capability to cope with expected rates.
 - Efficiency and multiplicity issues.
 - Rime resolution and trigger issues
- Technical feasibility of the concept; it has to be demonstrated by a test beam of a prototype (can be scaled down):
 - Readout concept.
 - Data handling issues.
 - Particle identification possibilities (if appropriate).
 - Mechanical issues.
 - Interaction with beam- and target-pipe (if appropriate).
- Feasibility of the production:
 - Person power.
 - Available infrastructure.
 - Financing issues.
- Influence on other detector components.
- Complexity and costs during the operation and maintenance.



Forward tracking inside the TS

Recently a wider discussion started about the forward tracking region inside the target spectrometer:

- it turned out that the tracking there is insufficient, esp. for hyperon detection and other long-living particles decaying outside the MVD with small p_t .
 - Several proposal to cover this region with additional tracking detectors (GEM, extra silicon disks etc) are currently under discussion but none of them exist as a realistic detector concept.
 - Impact to our TAG Tracking is unclear to me:
 - Can't ignore this development at all!
 - But if we want to include this in our work it will cause a significant delay (~6 months).
- Keep the current detector layout and discuss shortly the new approaches within the FT chapter.



Next steps

(1) Decide upon of design choices criteria for CT (TPC vs. STT)

→ April/May 2007

(2) Define and fix timeframe for TDR milestones.

→ April/May 2007

(3) Preparation of a concluding document of our work.

- Find volunteers for the missing chapters
- Prepare draft and discuss it.

→ May 2007

→ Final submission June 2007

Next VRVS conference late April or early May to decide point (1) and (2), point (3) then in June.