Summary of the January meeting

Institut für Kernphysik

Universität Mainz

Institut für Kernphysik

Forschungszentrum Jülich

GSI, March 3, 2009

First meeting in January

- Jim, Tsito and Tobias from Jülich
- Achim, Miriam, Werner and Wolfgang from Mainz

Guideline of the meeting:

2 of Tsito's talks

We learned:

- Minimum angle is 3 mrad to avoid a decrease of luminosity
- dE/dx: 80 keV / 300 µm at 6.2 GeV/c
- PANDA readout with clock 50 MHz

Tsito's simulation

- 4 Layers of 4 detectors (20 cm btw. layers)
- 4 detectors not overlapping, with gaps in between
- Each detector:
  - 2 cm x 5 cm
  - 300 µm thick
  - 50 pitch double sided
  - 30° and -60° rotated resp.
- CBM box generator with fixed momentum (6.2 GeV/c)
- Smearing of true info used up to now
- Optimizing for beam momenta from 1.5 - 8 (15) GeV
  - Detector properties
  - Resolution
  - Number of layers

Open questions (simulation)

- Angular acceptance (covering whole phi angle ?)
- Background simulation with inelastic background, DPM generator with elastic cross section included
- Small angle scattering in silicon
- Using of digitalization instead of smearing of true info
- Number of simultaneous expected tracks, separation of tracks possible ?
- Reconstruction of tracks (maybe only 3 layers ?)

- Difficulties for elastic cross section:
    - target position
    - beam emittance
    - background

More general questions

- Amplifiers for readout
- Two readout modes necessary
  - Online
  - Offline

- Online:
  - Fast decision about the number of found tracks per second (software and/or hardware decision ?)
  - Background subtraction
  - Clock or trigger signal

- Offline:
  - Track finding routine
  - Clock signal for the connection to PANDA
  - Second prong necessary to suppress inelastic background ?

Scintillating fibre detector

- Timing signal for online and/or offline trigger
- Faster than silicon detector
- Instead of 4th layer of silicon detectors

Technical details:

- Scintillating fibres (0.5 cm in diameter ?)
- Number of layers
- PM for high rate

$\rightarrow$ Simulation needed