CDR on Silicon Tracker

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outlines

- introduction
  - tracking requirements
  - material budget
  - dE/dx?
  - role in global tracking (with TPC, VTX)
- baseline design
  - detector layout and geometry
  - simulation study and optimisation
  - standalone (fast) simulation?
- technology options
  - silicon microstrip
  - silicon pixel
  - mixture?

outlines

- silicon microstrip sensors
  - sensor 10x10 cm^2, pitch 50 μm, σ_{SP} < 7 μm, thickness ~ 200 μm
- silicon pixel sensors
  - CMOS pixel sensors
  - sensors size and layout
  - nearly full processing circuits in pixel/chip: ADC, sparsification, zero-suppression, timing, etc
  - grouped readout electronics scheme
- front-end electronics
  - ASIC
  - optic-links
- powering and cooling
  - a survey of the last developments
  - powering based on DC-DC converters
  - silicon micro-channel cooling

outlines

- mechanics, assembly and alignment
  - support structure and material
    - carbon fibre reinforced polymer (CFRP)
  - module assembly
  - integration and alignment with other sub-detectors (VTX, TPC)
- tracking performance
  - tracking schemes comparison: standalone, with VTX and/or TPC
  - central region and end-cap regions
  - impact parameter resolution in the region of very small solid angle, $\theta < 10^{o}$
  - effect of beam-reduced background
- critical R&D
  - to be identified …
- cost estimate