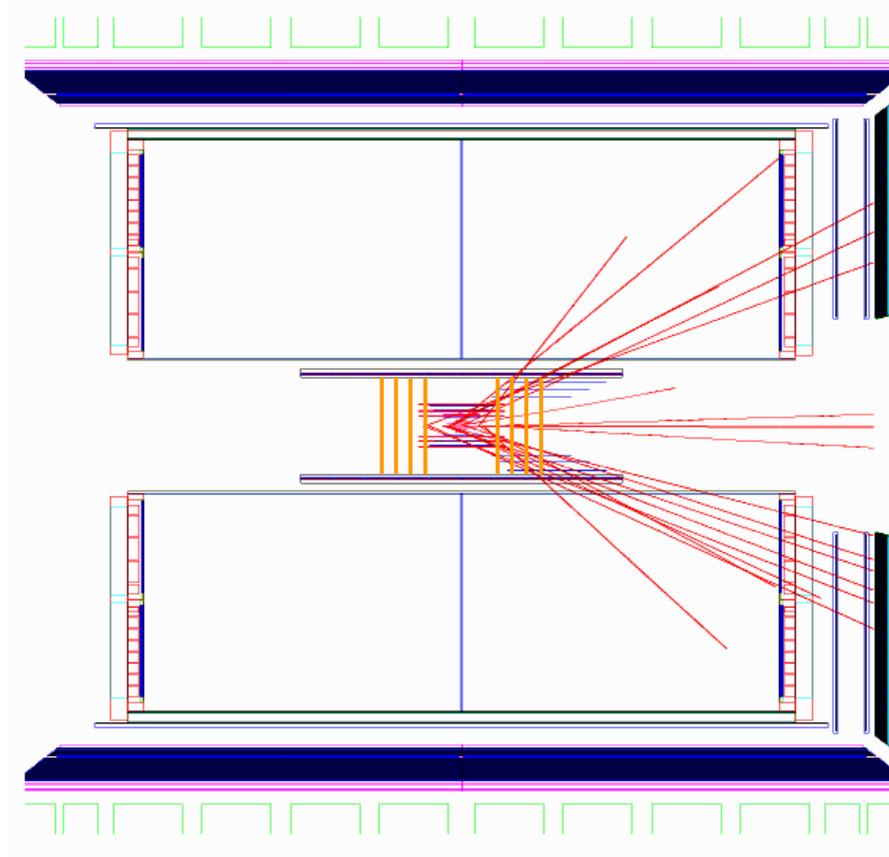


STAR discussion meeting on the inner and forward tracking upgrade (Part II)



Discussion session

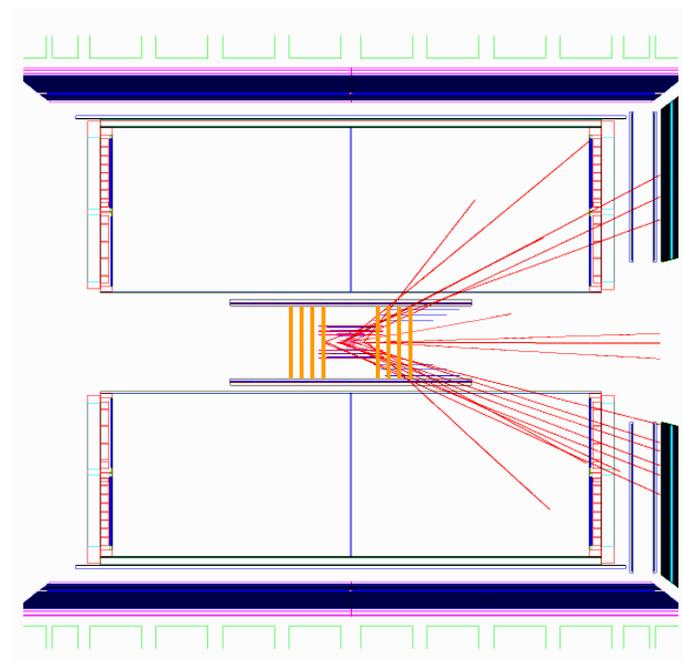
- **Where do we go from here?**
 - Discussion on inner/forward tracker upgrade strategy
 - Optimal sequence and staging of tracking proposals and upgrade plans

- **What needs to be done?**
 - Formulation of task list:
 1. Simulation (GEANT, physics simulation)
 2. Overall detector layout
 3. Detailed specific detector design

- **Who is interested to look into what (Institutional responsibilities)?**
 - Simulation work
 - R&D activities
 - Detector design and prototype

- **Formation of a working group within STAR and coordination?**

- **Discussion on funding?**



- **When do we meet again?**

Where do we go from here?

- Summary of Part I and discussions in preparation of this meeting:
 - **SVT performance** and maintenance is a concern! Repair is problematic! SVT is not a fast detector!
 - **RHIC SPIN long-term goal** (Requires continuous development of pp luminosity!):
 - ⇒ Explore spin structure of QCD sea and flavor dependence through **W production**
 - ⇒ Required for this are precise and fast tracking detectors:
 - EEMC forward tracker ($1 < \eta < 2$)
 - Inner/forward tracking (Extension of η coverage beyond $\eta = 1$ (Current SVT!) is necessary!)
 - Potential technology: Silicon / GEM
 - **Heavy quark physics** (AuAu and pp) is of great interest!
 - **Deal with TPC pile-up problem** before replacement of TPC (After 2010!)
 - Eventually **FTPC** will face similar issues. Besides that, FTPC maintenance is a concern!
 - **Forward physics** has attracted a lot of interest!
 - Pixel mechanical design ideas of being replaceable is difficult with the current FTPC! **Starting with a new inner tracker design with forward acceptance (Pixel + Barrel layers and forward disks!)** is advantageous!

Where do we go from here?

- Summary of Part I and discussions in preparation of this meeting:
 - MIT LNS silicon laboratory and MIT-BATES exist together with experienced personnel to strongly participate in the STAR tracking upgrade
 - Time-scale to build a new silicon tracker will take 1-2 years once the sensor material is in hand based on direct experience from PHOBOS
 - If one would consider a new inner tracker (silicon and pixel) which has by design the flexibility to be replaceable, one could think of a clearly staged approach! We could start for example with the pixel detector and a minimal new inner silicon detector on the size of the current SVT
 - Mechanical design could be made from the beginning such that it allows a staged approach:
 - ⇒ Example 1. Pixel+minimal silicon tracker and 2. Installation of forward disks

Where do we go from here?

■ Proposal on how to proceed:

- **Conceptual design** of a new inner tracker (**Barrel and forward disks besides pixel detector**)! on the GEANT level which fulfills the pp and AuAu needs by **summer 2004**
- First engineering layout (**Draft proposal**) by **January 2005**
- **Proposal by summer 2005** (New Inner silicon tracker has be strongly based on pp case!)
- **First installation** of pixel and minimal inner tracking system starting **2007/2008**
- **Completion of installation** by **2008/2009**

Again:

- MIT-LNS Silicon laboratory exists together with personnel
- MIT-BATES GEM-facility is being considered by several MIT faculty members
- Potential resources from MIT-LNS in general

What needs to be done?

■ Formulation of task list:

- Simulation (GEANT, physics simulation)
- Overall detector layout (Silicon Barrel layers/Forward wheels and GEM tracker)
- Detailed specific detector design

Who is interested to look into what?

- Simulation work
- R & D activities
- Detector design and prototype

Formation of a working group & coordination

- Working group?
- Coordination?

Discussion on funding

- Discussion on potential sources?
- Discussion on time-line?

When do we meet again?

- Place: STAR Collaboration meeting at CalTech?
- Time: February 2004?
- Regular meetings / phone link: Starting on January, 2004?