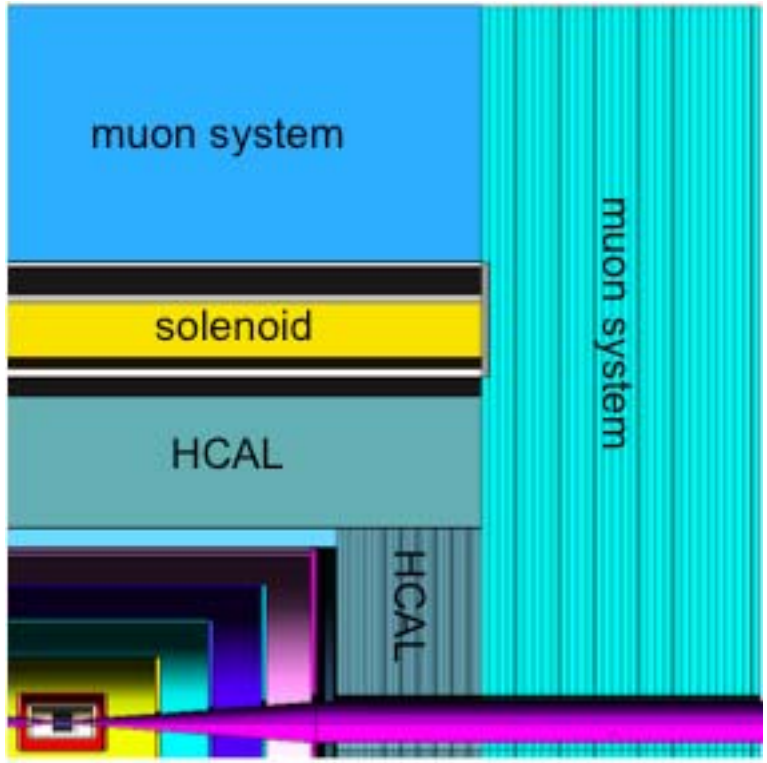
SiD design study

SiD Muon System

H.Band

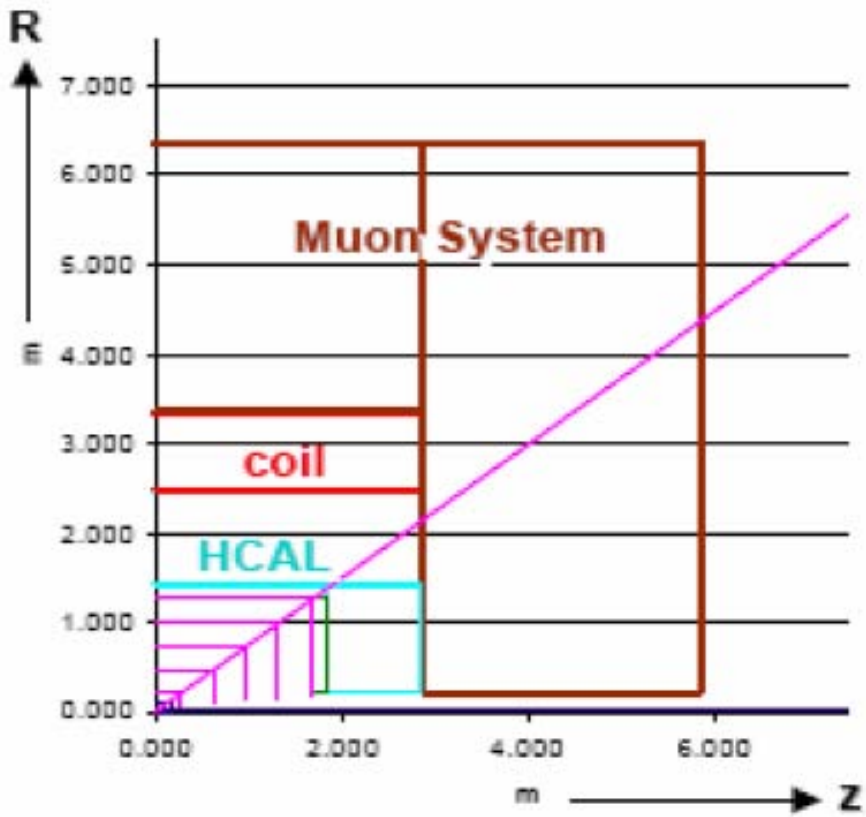


SiD Muon System

- **SiD Muon detector effort is starting at this workshop**
  - Co-conveners - Gene Fisk & H. Band
- **Late compared to other concept detectors and SiD systems**
- **However,**
  - Differences in muon detector requirements for the different concepts are small
  - Many ILC muon studies to build on
    - Muon Mini workshop next week
  - Chance for real contributions by participants

SiD Muon Design

- *Overall size set by other components of SiD*
- *ECAL + HCAL + Solenoid ~ 6Λ*
- *Total steel thickness of 2.4 m needed for flux return ~14Λ*
- *Total area 5000-15000 m² depending on # of layers*



Muon Detector Design Questions

- **Assume momentum measured in central tracker**
- **What spatial resolution is needed to match tracks coming from calorimeter?**
  - **Isolated**
  - **Inside jets**
- **Will the detector be useful as a tail catcher for hadron showers?**
- **If so, what segmentation is appropriate**
- **How many layers are needed?**
  - **32-24-12 ?**
- **Are there serious backgrounds?**
  - **Muon halo**
  - **Neutrons?**
  - **Outer endcap layers?**

Technology Choices

- The usual arguments apply
- Large area >> inexpensive
- Hard to replace >>reliable

- Many technologies have been used
  - Extruded scintillator
  - Glass RPCs
  - LSTs
  - Bakelite RPCs

SiD design study

Workshop Goals

- *Two main goals*
  - *Identify and organize interested people*
  - *Understand detector requirements*
- *What are relevant physics benchmarks?*
  - *HZ,smuons, BB jets*
- *Would prefer that requirements dictate design choices*

- *15 people have expressed interest in SiD and Muon - good base if they came to work*
- *Room for many others to contribute*

Parallel Sessions

- First meeting of interested participants
- Wed 8:30 Jewel(?) Meeting room
- Other times to be scheduled as needed