The sid02 Tracker

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sid02

- The silicon detector geometry description needs to be updated for the LOI studies. sid01 \rightarrow sid02
- The proposed tracker for sid02 is the same as that used in sid01.
- A compact.xml description for sid02 incorporating changes requested for the hadron calorimeters, muon system, and far forward systems, has been committed to cvs.

Change Request

- I would like to request that the strawman technology for the forward, low-angle tracking stations within the vertex support tube be changed from stereo layers of silicon microstrip to silicon pixels.
- I had hoped that the studies motivating this would have been done by now, but, failing that, I would appeal to your intuition that the hit occupancies and the amount of material in this region almost require pixel readout.

sid01

sid02'

<!-- Forward Tracker Modules inside the support tube --> <detector id="15" name="TrackerForward" type="DiskTracker" reflect="true"</p> readout="TkrForwardHits"> <laver id="1" inner r = "2.78*cm" inner z = "20.4*cm" outer r = "16.67*cm"> <slice material = "Silicon" thickness = "0.03*cm" sensitive = "yes" /> <slice material = "Silicon" thickness = "0.00048*cm" /> <slice material = "Kapton" thickness = "0.0038*cm" /> <slice material = "Copper" thickness = "0.00038*cm" /> <slice material = "PEEK" thickness = "0.02*cm" /> <slice material = "Rohacell31 50percent" thickness="0.3*cm" /> <slice material = "Epoxy" thickness="0.0175*cm" /> <slice material = "CarbonFiber" thickness=".016*cm" /> </layer> layer id="2" inner_r = "2.78*cm" inner_z = "20.80*cm" outer_r = "16.67*cm"> <slice material = "Silicon" thickness = "0.03*cm" sensitive = "ves" /> <slice material = "Silicon" thickness = "0.00048*cm" /> <slice material = "Kapton" thickness = "0.0038*cm" /> <slice material = "Copper" thickness = "0.00038*cm" /> </laver> layer id="3" inner_r = "7.51*cm" inner_z = "53.85*cm" outer_r = "16.67*cm"> <slice material = "Silicon" thickness = "0.03*cm" sensitive = "yes" /> <slice material = "Silicon" thickness = "0.00048*cm" /> <slice material = "Kapton" thickness = "0.0038*cm" /> <slice material = "Copper" thickness = "0.00038*cm" /> <slice material = "PEEK" thickness = "0.02*cm" /> <slice material = "Rohacell31 50percent" thickness="0.3*cm" /> <slice material = "Epoxy" thickness="0.0175*cm" /> <slice material = "CarbonFiber" thickness=".016*cm" /> </laver> <laver id="4" inner r = "7.51*cm" inner z = "54.25*cm" outer r = "16.67*cm"> <slice material = "Silicon" thickness = "0.03*cm" sensitive = "yes" /> <slice material = "Silicon" thickness = "0.00048*cm" /> <slice material = "Kapton" thickness = "0.0038*cm" /> <slice material = "Copper" thickness = "0.00038*cm" /> </laver> <layer id="5" inner r = "11.65*cm" inner z = "82.95*cm" outer r = "16.67*cm"> <slice material = "Silicon" thickness = "0.03*cm" sensitive = "yes" /> <slice material = "Silicon" thickness = "0.00048*cm" /> <slice material = "Kapton" thickness = "0.0038*cm" /> <slice material = "Copper" thickness = "0.00038*cm" /> <slice material = "PEEK" thickness = "0.02*cm" /> <slice material = "Rohacell31 50percent" thickness="0.3*cm" /> <slice material = "Epoxy" thickness="0.0175*cm" /> <slice material = "CarbonFiber" thickness=".016*cm" /> </layer> layer id-"6" inner_r - "11.65*cm" inner_z - "83.35*cm" outer_r - "16.67*cm"> <slice material = "Silicon" thickness = "0.03*cm" sensitive = "yes" /> <slice material = "Silicon" thickness = "0.00048*cm" /> <slice material = "Kapton" thickness = "0.0038*cm" /> <slice material = "Copper" thickness = "0.00038*cm" /> </laver> </detector>

```
<!-- Forward Tracker Modules inside the support tube -->
<detector id="15" name="TrackerForward" type="DiskTracker" reflect="true"
readout="TkrForwardHits">
<layer id="1" inner_r = "2.78*cm" inner_z = "20.4*cm" outer_r = "16.67*cm">
<slice material = "Silicon" thickness = "0.03*cm" sensitive = "yes" />
<slice material = "Silicon" thickness = "0.0048*cm" />
<slice material = "Kapton" thickness = "0.0038*cm" />
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<slice material = "Rohacell31_50percent" thickness="0.3*cm" />
<slice material = "Epoxy" thickness="0.0175*cm" />
<slice material = "CarbonFiber" thickness=".016*cm" />
</layer>
```

<layer id="2" inner_r = "7.51*cm" inner_z = "53.85*cm" outer_r = "16.67*cm">
 <slice material = "Silicon" thickness = "0.03*cm" sensitive = "yes" />
 <slice material = "Silicon" thickness = "0.0048*cm" />
 <slice material = "Kapton" thickness = "0.0038*cm" />
 <slice material = "Copper" thickness = "0.0038*cm" />
 <slice material = "PEEK" thickness = "0.002*cm" />
 <slice material = "Rohacell31_50percent" thickness="0.3*cm" />
 <slice material = "Epoxy" thickness="0.0175*cm" />
 <slice material = "CarbonFiber" thickness=".016*cm" />
</layer>

```
<layer id="2" inner_r = "11.65*cm" inner_z = "82.95*cm" outer_r = "16.67*cm">
    <slice material = "Silicon" thickness = "0.03*cm" sensitive = "yes" />
    <slice material = "Silicon" thickness = "0.0048*cm" />
    <slice material = "Kapton" thickness = "0.0038*cm" />
    <slice material = "Copper" thickness = "0.0038*cm" />
    <slice material = "Copper" thickness = "0.0038*cm" />
    <slice material = "PEEK" thickness = "0.02*cm" />
    <slice material = "Rohacell31_50percent" thickness="0.3*cm" />
    <slice material = "Epoxy" thickness="0.0175*cm" />
    <slice material = "CarbonFiber" thickness=".016*cm" />
</layer>
```

Changes

- Proposing the simplest change possible,
 i.e. simply removing the second layer of silicon at each measurement station.
- No thinning of support, no change in readout.
- Nick has already released code which allows pixel digitization for these disks.

– Have tested this and works fine.