Update on IST Geometry

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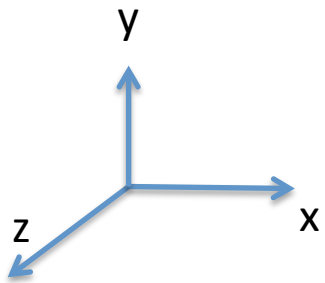
(UIC)

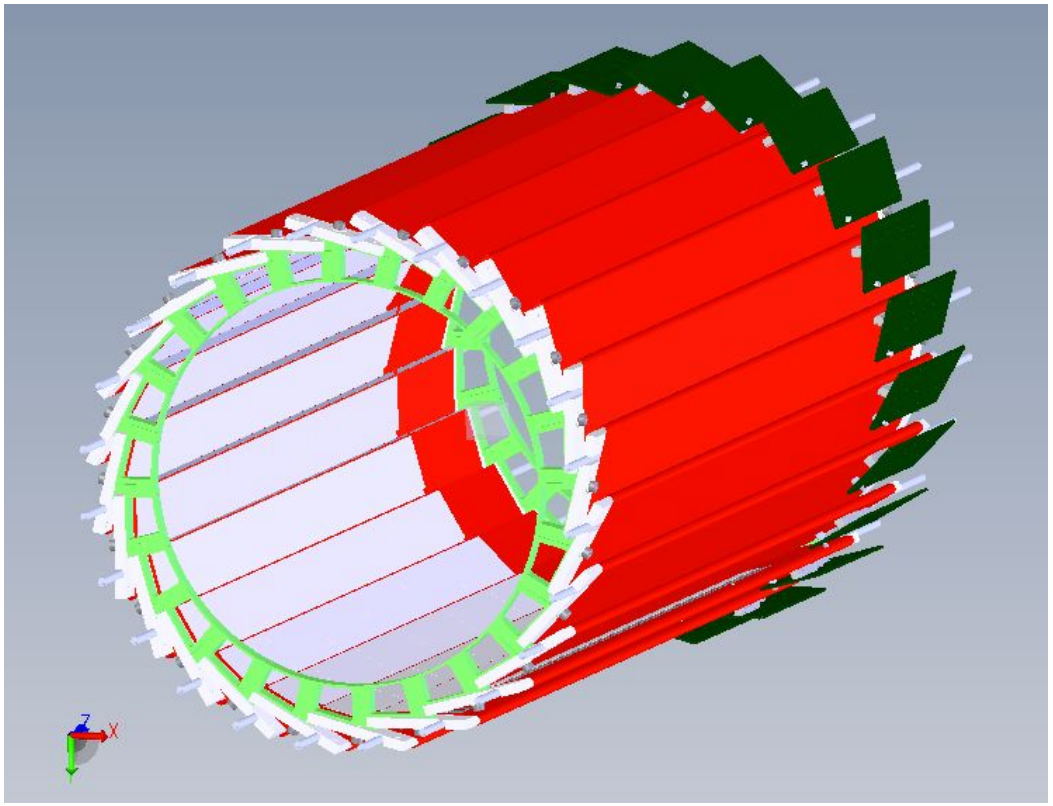
Outline

- IST geometry update
- Check in simulation

New geometry for IST – modeling

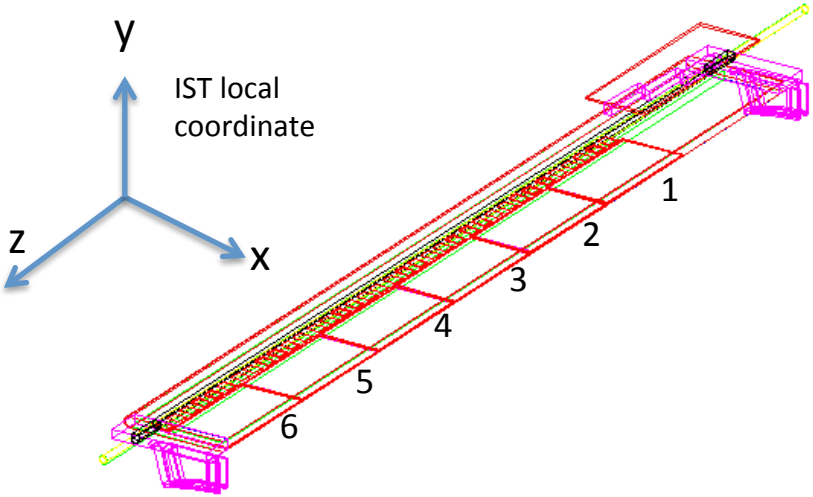


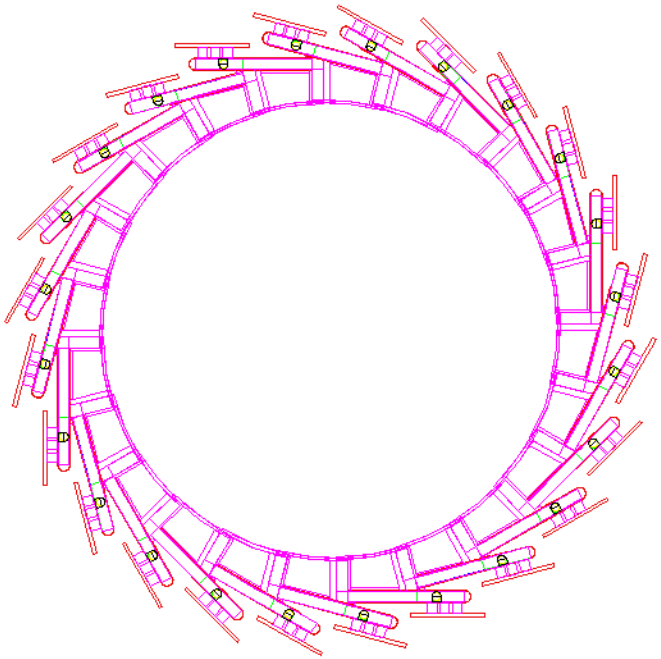
Coordinate used in IST geometry modeling, which is different with the SolidWorks.



- IST geometry modeling is based on the latest SolidWorks drawings (IST Assy rev 8_12)
- The correlations between our IST coordinate and STAR global coordinate need to be confirmed.
- All parts in the SolidWorks drawings have been modeled in the IST geant geometry, except for a few screws (to fix the support block) and thermal sensor.

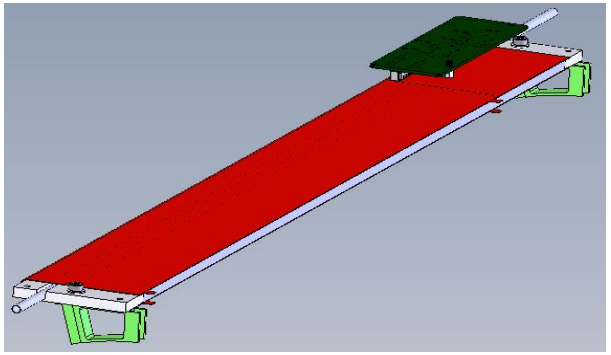
New geometry for IST (AgML) – modeling





New geometry for IST stave:

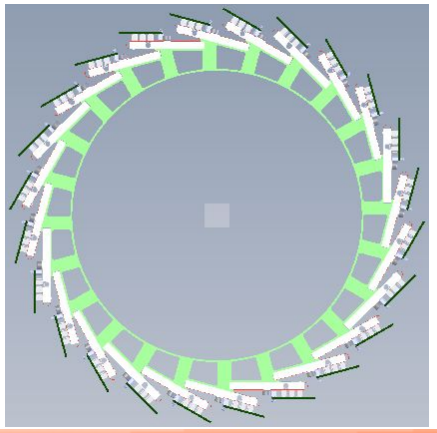
gexec .$STAR_HOST_SYS/lib/xgeometry.so
draw IBAM 40 40 0 10 10 .4 .4



solidworks

New geometry for whole IST detector:

gexec .$STAR_HOST_SYS/lib/xgeometry.so
draw IBMO 0 90 0 10 10 .5 .5



solidworks

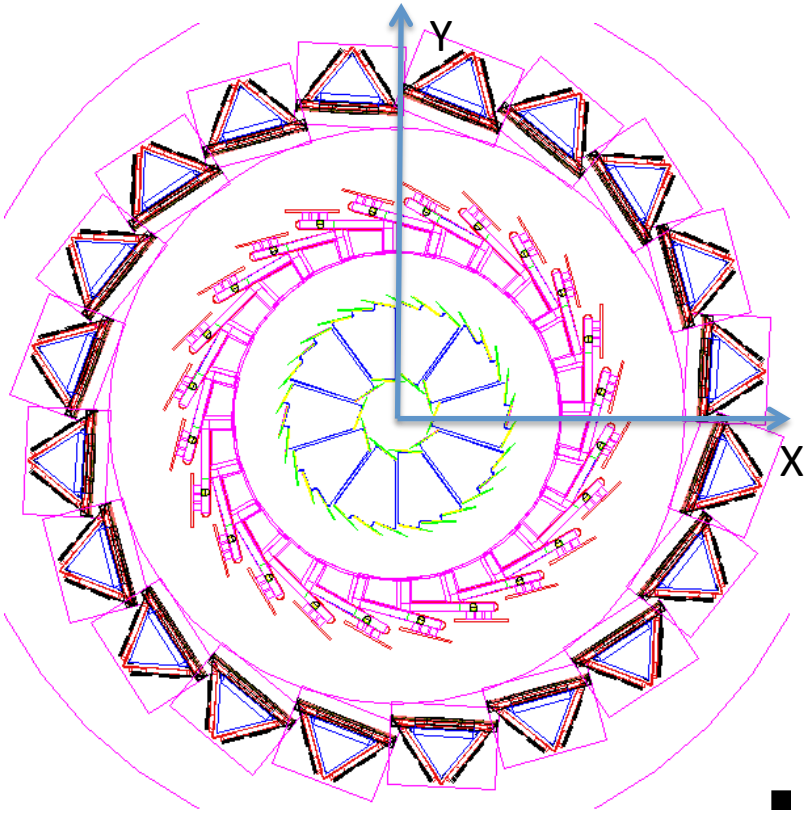
New IST geometry – location

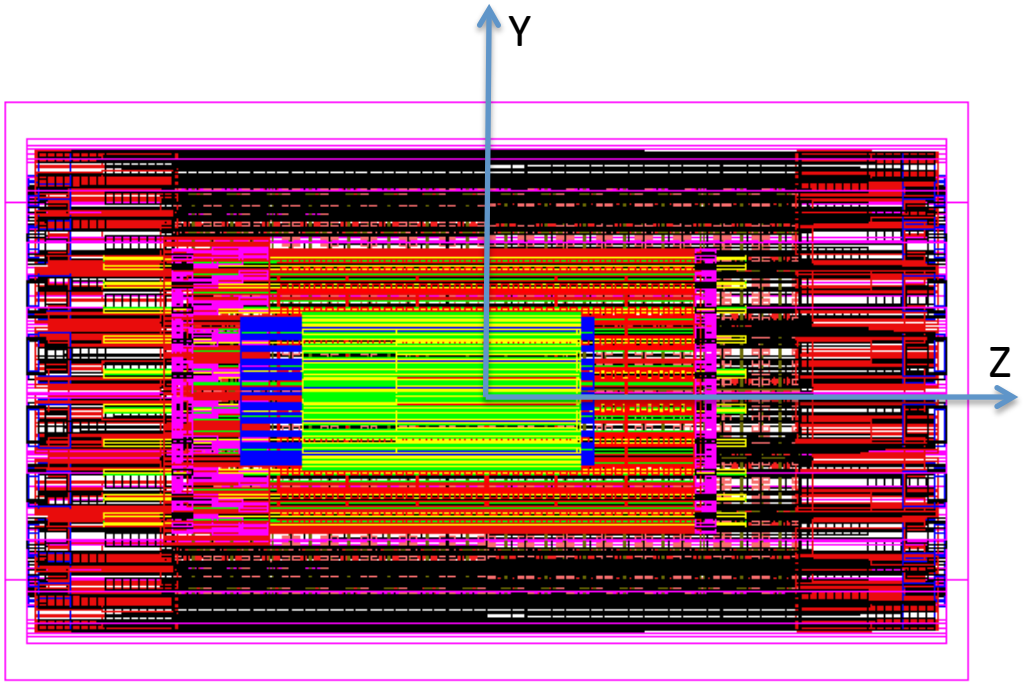
IST location (XY view):

gexec .$STAR_HOST_SYS/lib/xgeometry.so
Draw SFMO 0 90 0 10 10 .35 .35 (SSD)
Draw IBMO 0 90 0 10 10 .35 .35 (IST)
Draw PXMO 0 90 0 10 10 .35 .35 (PXL)

IST location (YZ view):

gexec .$STAR_HOST_SYS/lib/xgeometry.so
Draw SFMO 90 90 0 10 10 .18 .18 (SSD)
Draw IBMO 90 90 0 10 10 .18 .18 (IST)
Draw PXMO 90 90 0 10 10 .18 .18 (PXL)





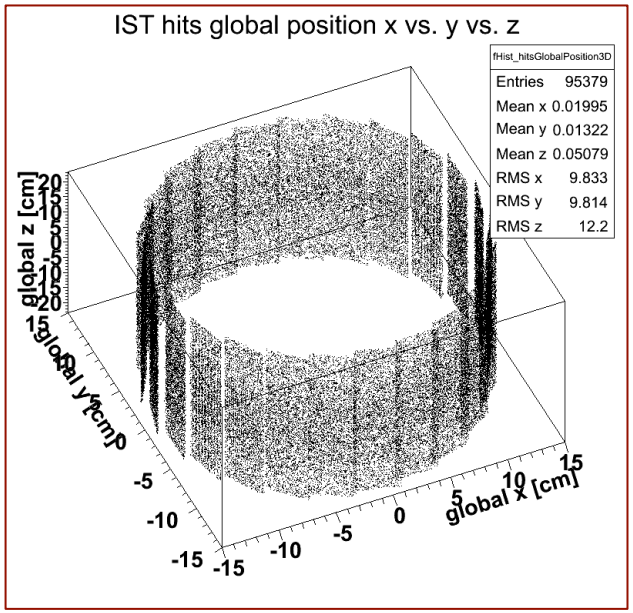
New IST geometry – global position check

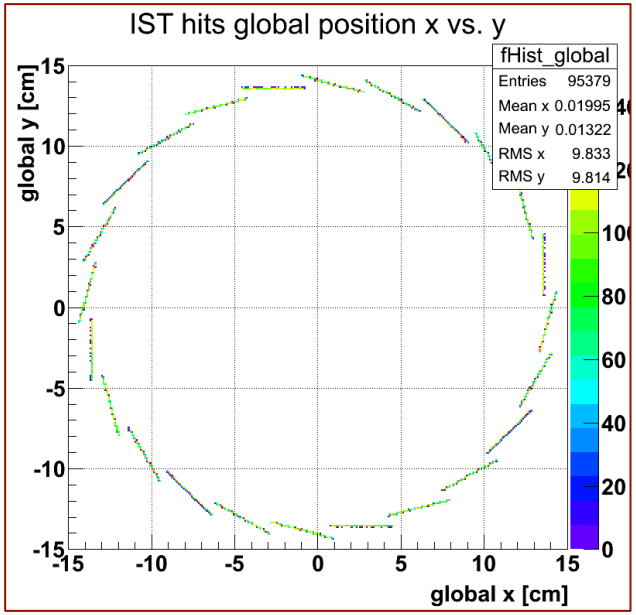
Simulation:

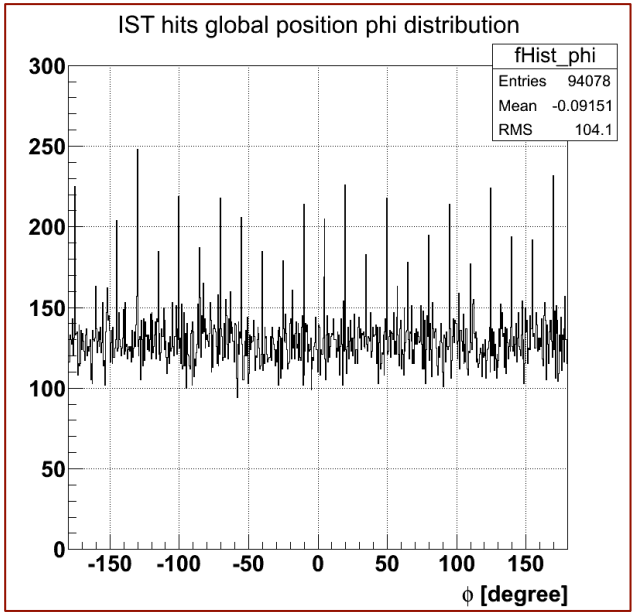
Starver DEV
starsim
detp geom dev14
gexec .$STAR_HOST_SYS/lib/xgeometry.so
gclose all
gfile o 10pion_10000evts.fz
user/vsig 0 0.1
aguser/gkine 10 8 0.1 5.0 -1.5 1.5 0 6.28
Trig 10000

Reconstruction:

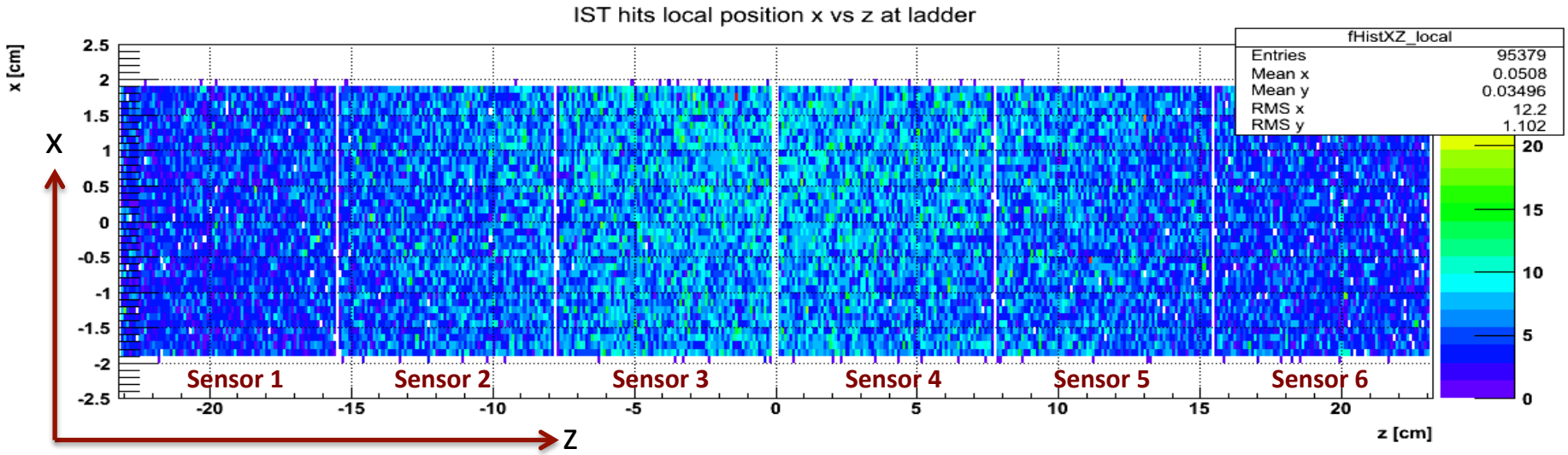
Starver DEV
root4star -b -q 'bfc.C(1,10000,"-TpcRS, dev14, MakeEvent, AgML, -ssdfast, istFastSim, -pixFastSim, ITTF, Idst, logger, Sti,VFMCE,-tpcDB,-TpcHitMover,-TpxClu,-SsdIt,StiRnd,-IstIT,-PixelIT, McEvent, geant, IdTruth, fzin, NoSvtIt, StiPulls, analysis,tags,clearmem,evout,-McEvOut,-MiniMcMk,-McAna, MakeEvent,-CMuDST",”./10pion_10000evts.fz")'

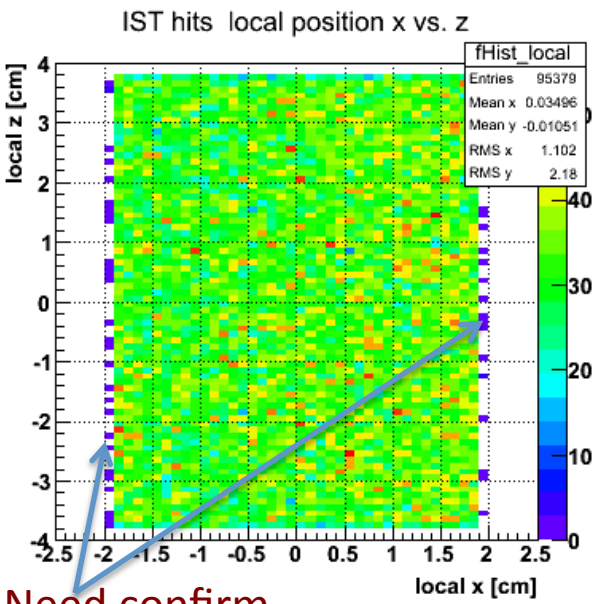


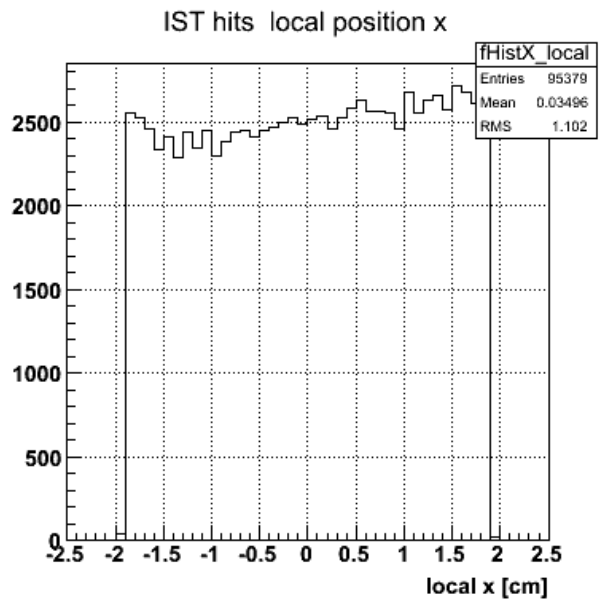


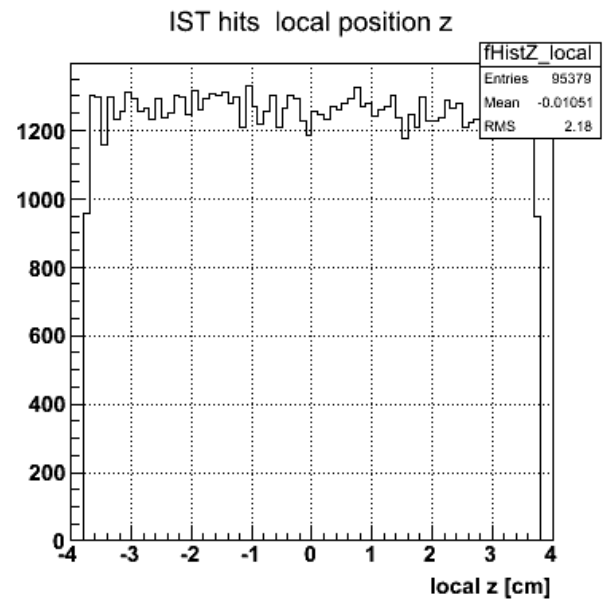


New IST geometry – local position check









Need confirm

New IST geometry – material

Part name	Material (currently used in geometry)
CFoam	Carbon
Choneycomb	Carbon fibre reinforced plastics (CFRPMix)
CF Skin	Carbon fiber
Kapton hybrid	G10
Cooling tube	Aluminium
Cooling liquid	Water
Endcap	Delrin
Support ring block	Delrin
Transition board	G10
T-Board connector	Delrin
Sensor active area	Silicon (sensitive)
Sensor dead area	Silicon (passive)
APV chips	Silicon (passive)

The materials need to be confirmed!

New IST geometry – Todo

1. The materials need to be confirmed.

2. Confirm the exact placement position in phi for ladder at STAR detector (STAR global coordinate for each ladder), check with Jim (MIT).

3. The screws and the thermal sensor will be implemented.

4. The cables and cooling tubes (currently the cooling tube is floating) will be modeled once they are available in the SolidWorks drawings.

5. Try to prepare a note to describe the IST geometry modeling in detail. It will be sent to you for confirmation once it's available.

Thanks!