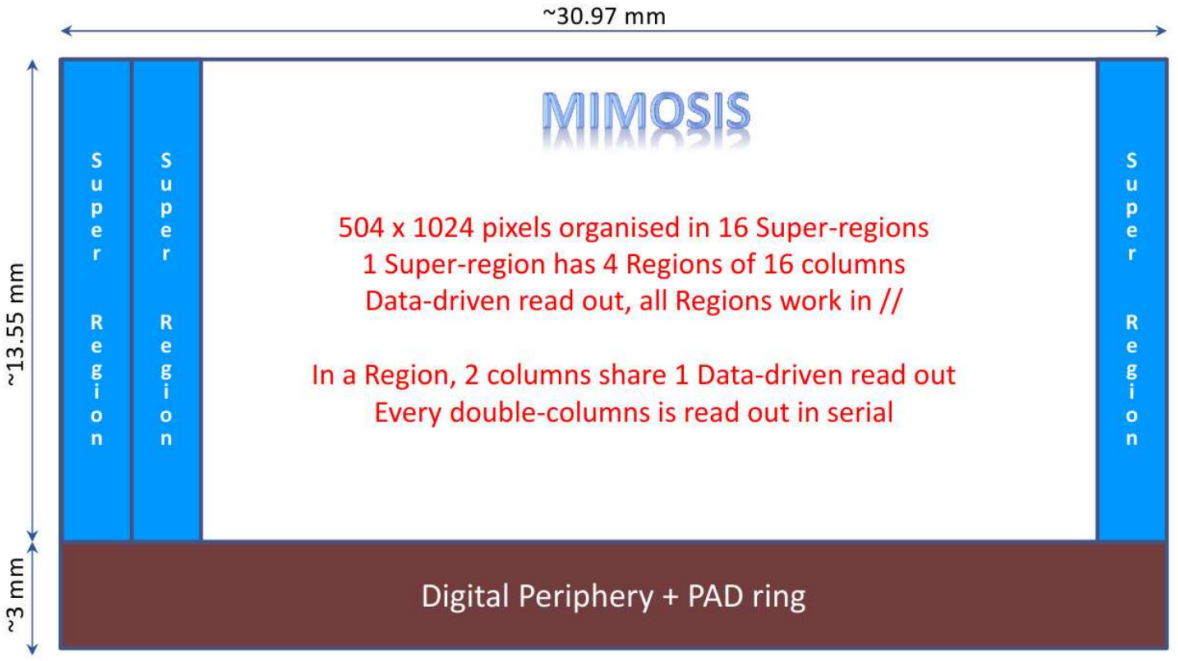
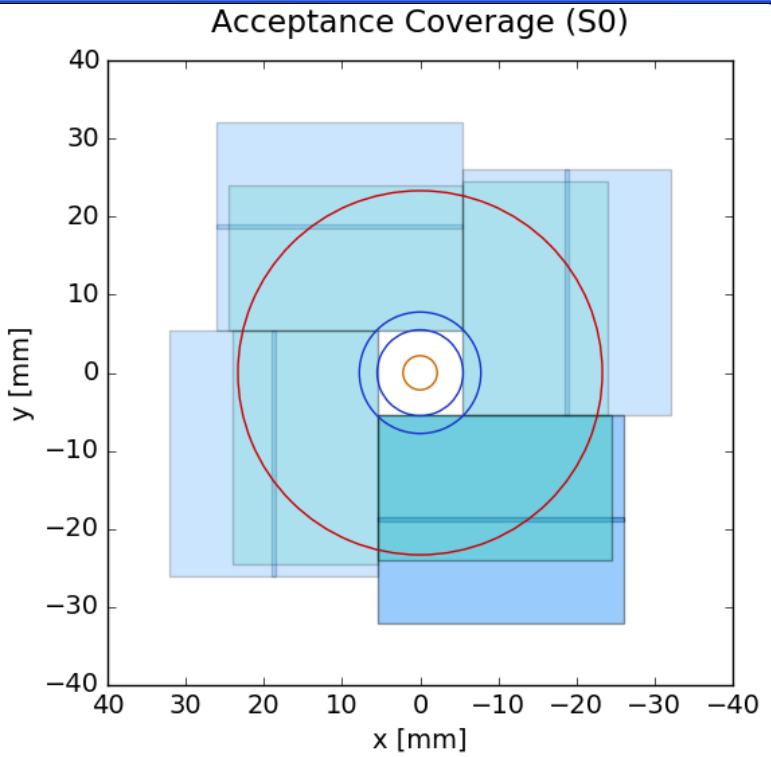
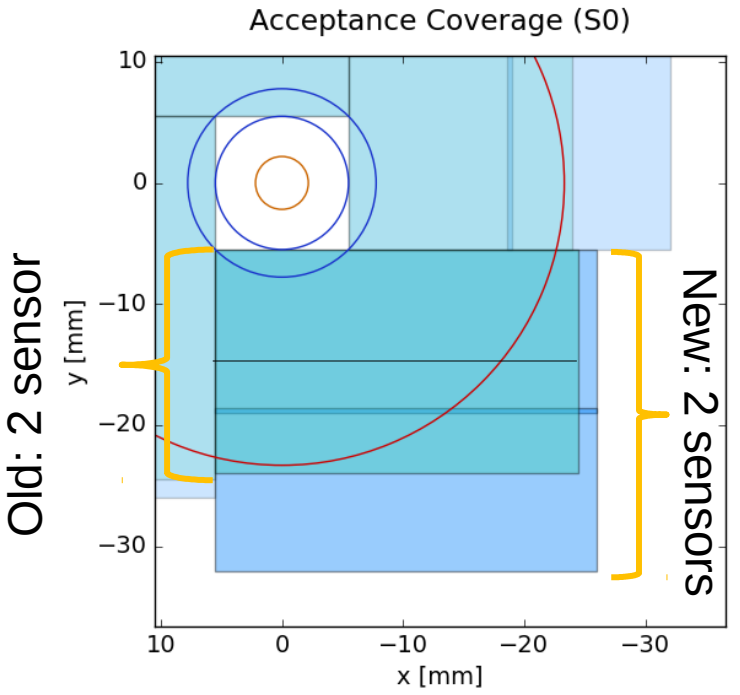
Updates on the Micro Vertex Detector Geometry for the CBM - Experiment

MIMOSIS layout and geometry



New Sensor dimensions

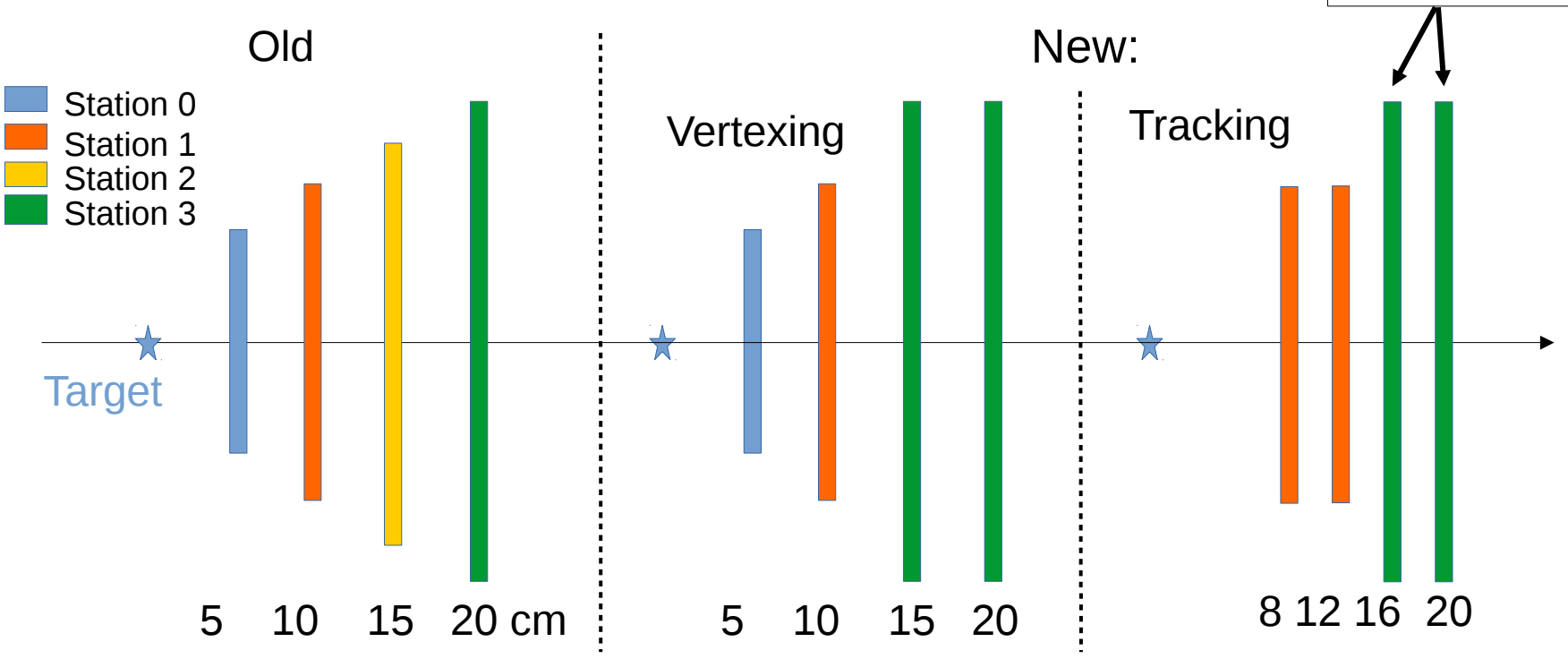




- Larger sensor geometry => Less sensors needed at some places.
- All sensors moved => Rework full geometry.
- Modest improvement of material budget.

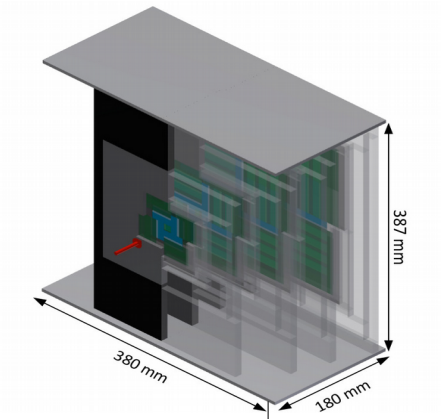
New MVD geometry layout

Re-use building blocks to increase efficiency of the assembly process.



Status MVD Software

MVD Digitizer conzept

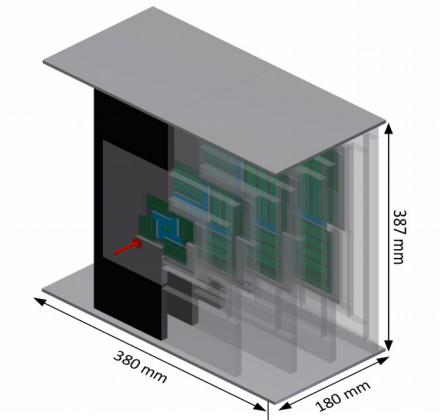


CbmMvdDetector

CbmMvdGeoManager

CbmMvdSensorDataSheet

MVD Digitizer conzept



CbmMvdDetector

CbmMvdSensor1

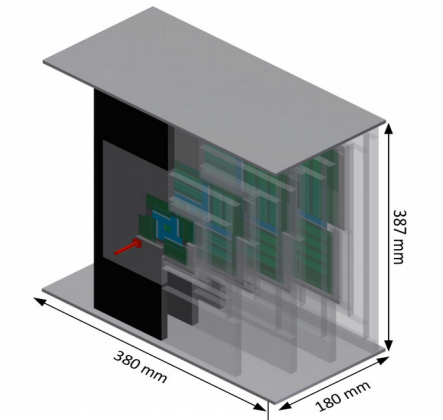
CbmMvdSensor2

....

CbmMvdGeoManager

CbmMvdSensorDataSheet

MVD Digitizer conzept



CbmMvdDetector

CbmMvdSensor1
Digitizer1
CbmMvdSensor2
Digitizer2
....

data

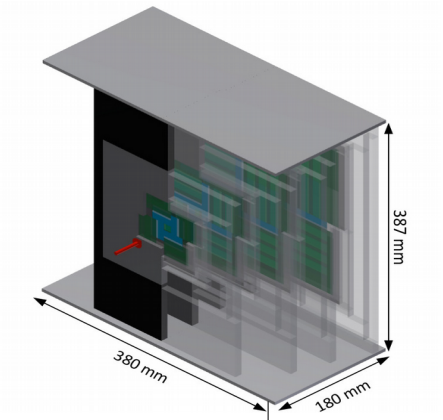
CbmMvdGeoManager

CbmMvdDigitizer

CbmMvdSensorDataSheet

Provide parameter set

MVD Digitizer conzept



CbmMvdDetector

CbmMvdSensor1
Digitizer1
CbmMvdSensor2
Digitizer2
....

data

CbmMvdGeoManager

CbmMvdDigitizer

CbmMvdHitfinder

CbmMvdSensorDataSheet

Provide parameter set

New Geometries

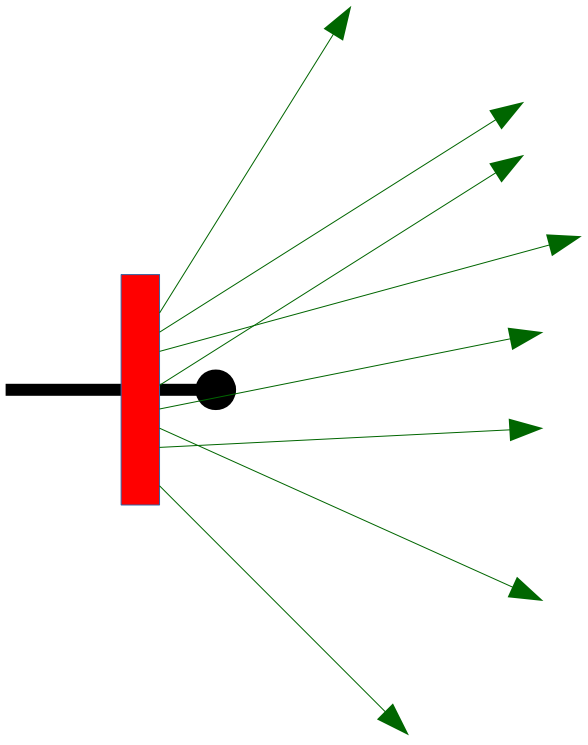
```
CbmSetup* setup = CbmSetup::Instance();
setup->SetFieldScale();
setup→SetModule(kMvd, “v17a_vx”);


CbmMvdDetector::SetSensorTyp(CbmMvdSensorTyp::MIMOSIS);


CbmMvdDigitizer* mvdDigitise =
                        new CbmMvdDigitizer("MVD Digitiser", 0, iVerbose);
```

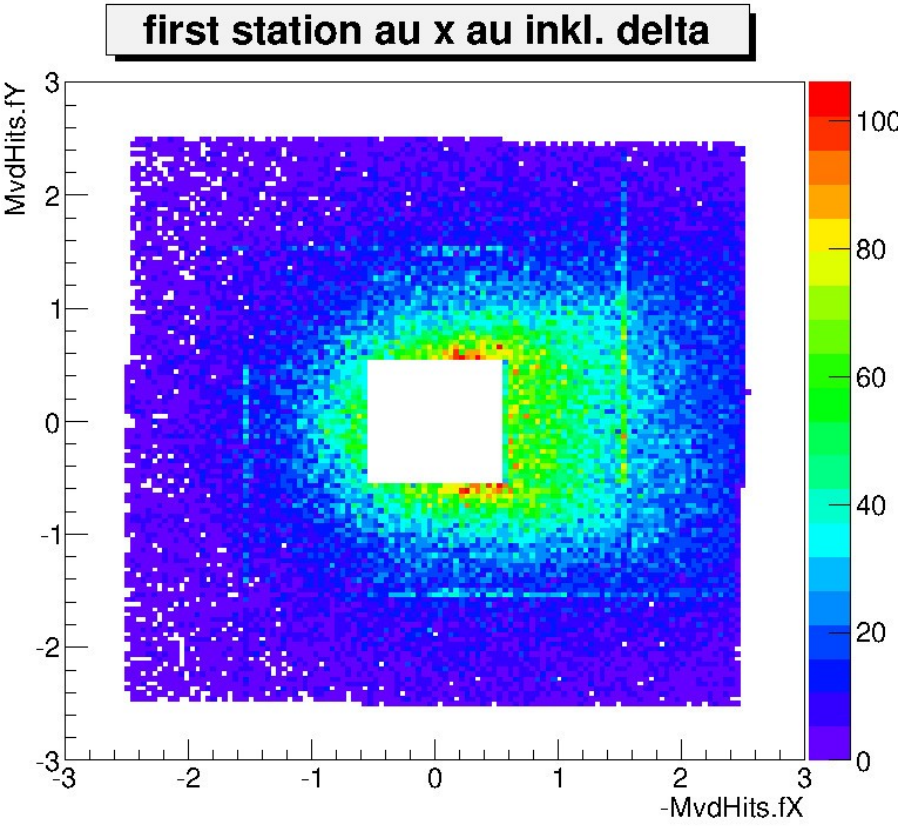
Sensor typ is set via a static Function in CbmMvdDetector.

Digitizer and reconstruction automatically get parameters from data sheets

Test: New geometries

Delta electrons on S0

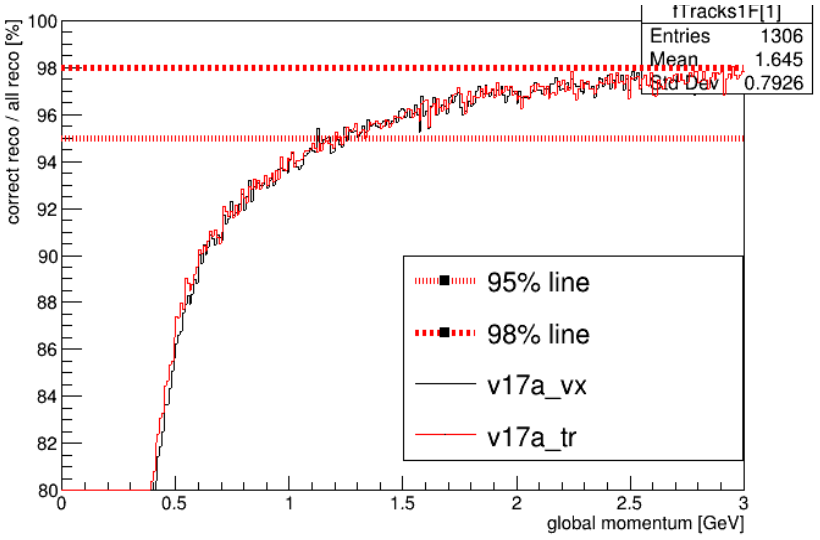


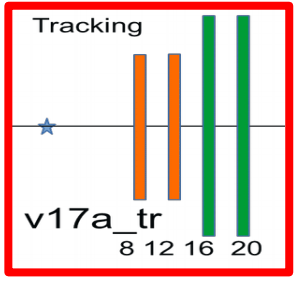


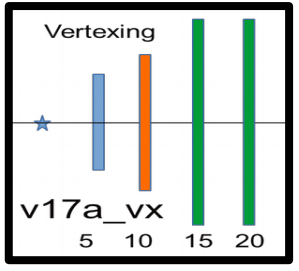
Vertex vs. Tracking Geometry

Au+Au, 10 AGeV
100 kHz

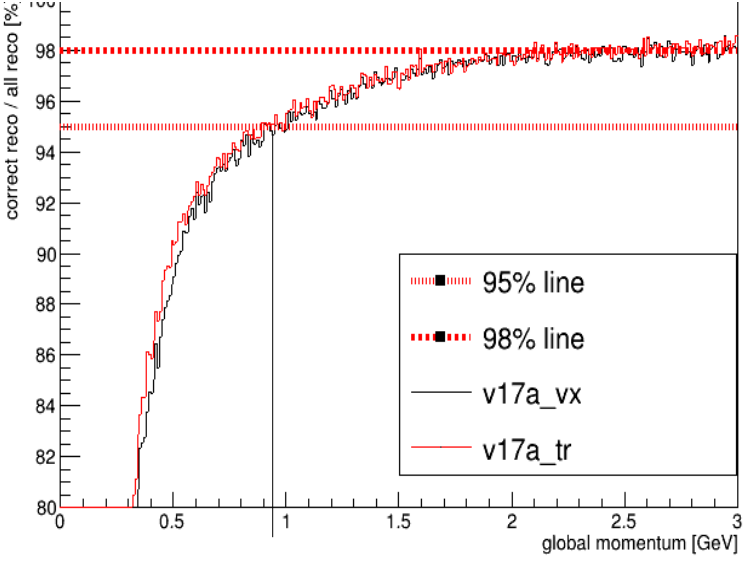
Field =100%







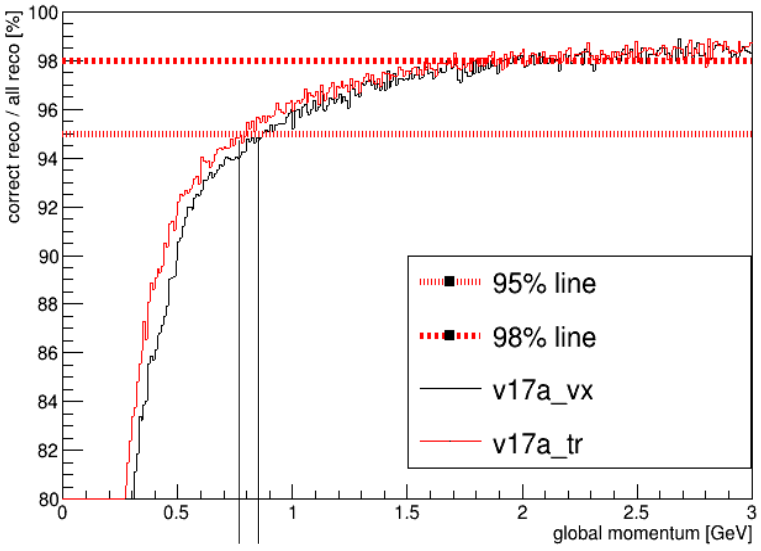
Field =70%

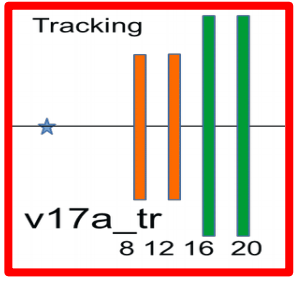


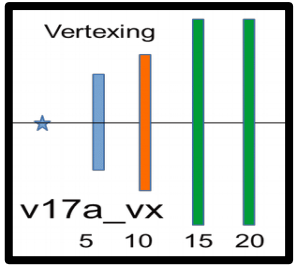
Vertex vs. Tracking Geometry

Au+Au, 10 AGeV
100 kHz

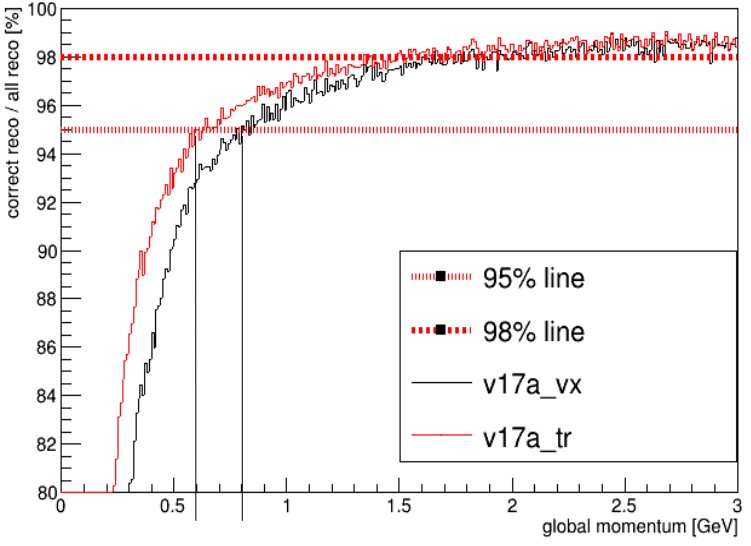
Field =50%







Field =30%



Tracking geometry helps in reconstruction low momentum tracks

Summary and conclusion

- New Sensor design implemented.
- New updated geometries available and tested.
- New design helps in low momentum track reconstruction.

Questions?