

CyMBaL Material Budget

Yann Bedfer

CEA/DPhN Saclay

12 February 2024

Ante by Niv

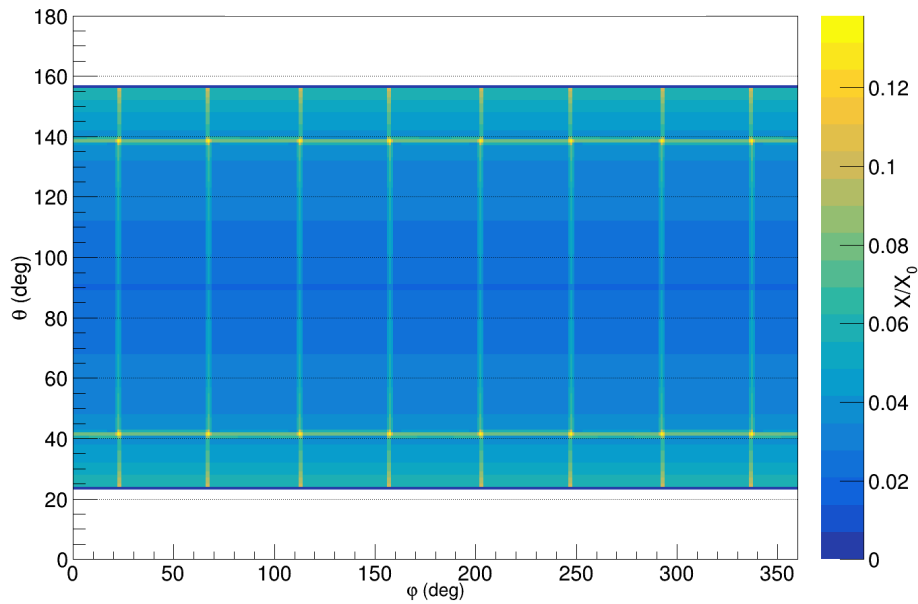
- See: 12/02 presentation by Matt.

CyMBaL Material Budget

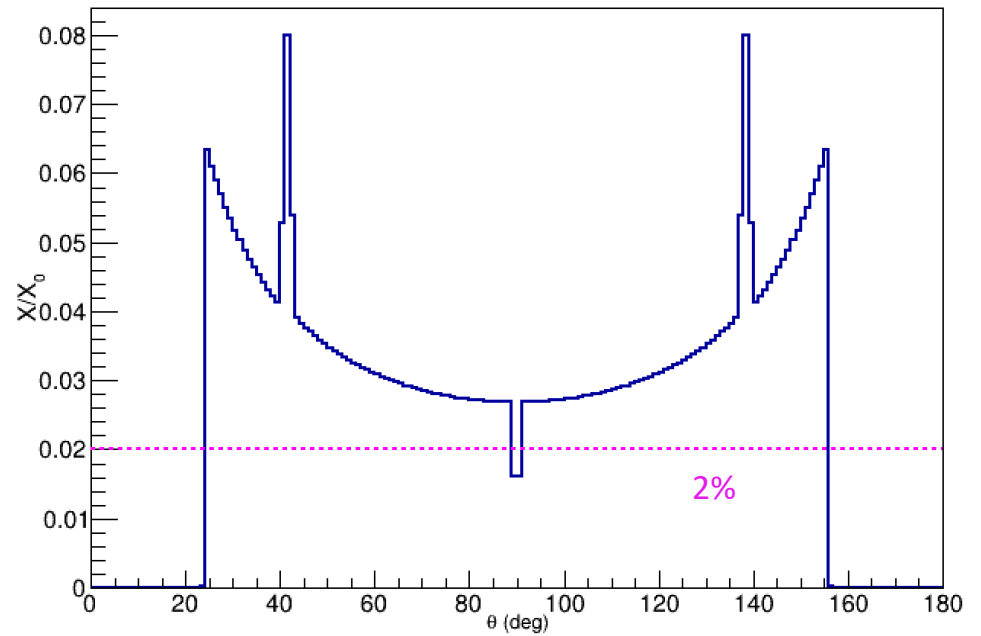


Is CyMBaL material budget correct?

CymBaL



CymBaL



February 12th, 2024

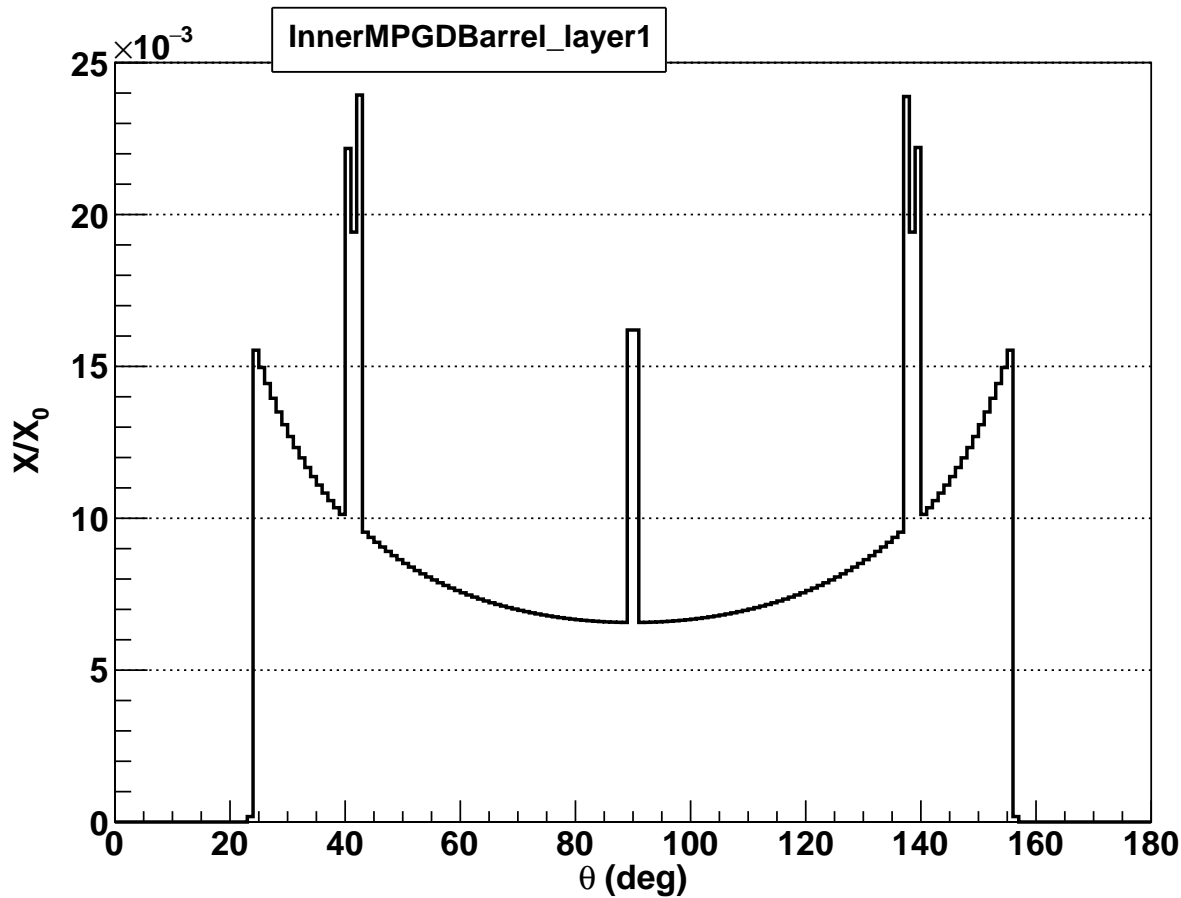
2

Update (*not committed yet...*)

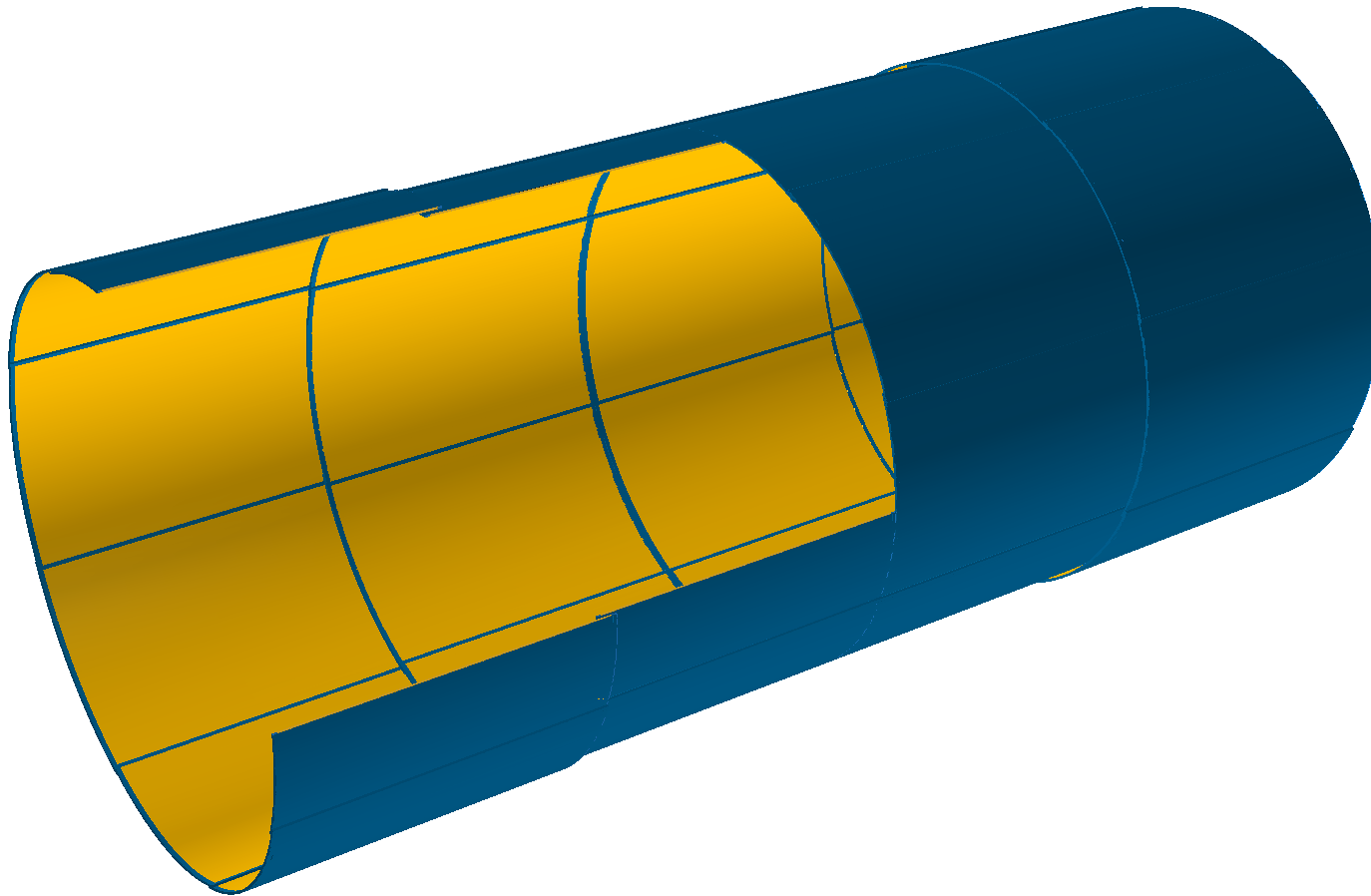
- Branch "inner-mpgd-barrel-geoUpdate", File "mpgd_barrel_ver1.xml" #fe82627

```
<module_component name="DriftKapton" ... material="Copper" ... />
```

```
<module_component name="KaptonOverlay" ... material="Copper" ... />
```



Assembly

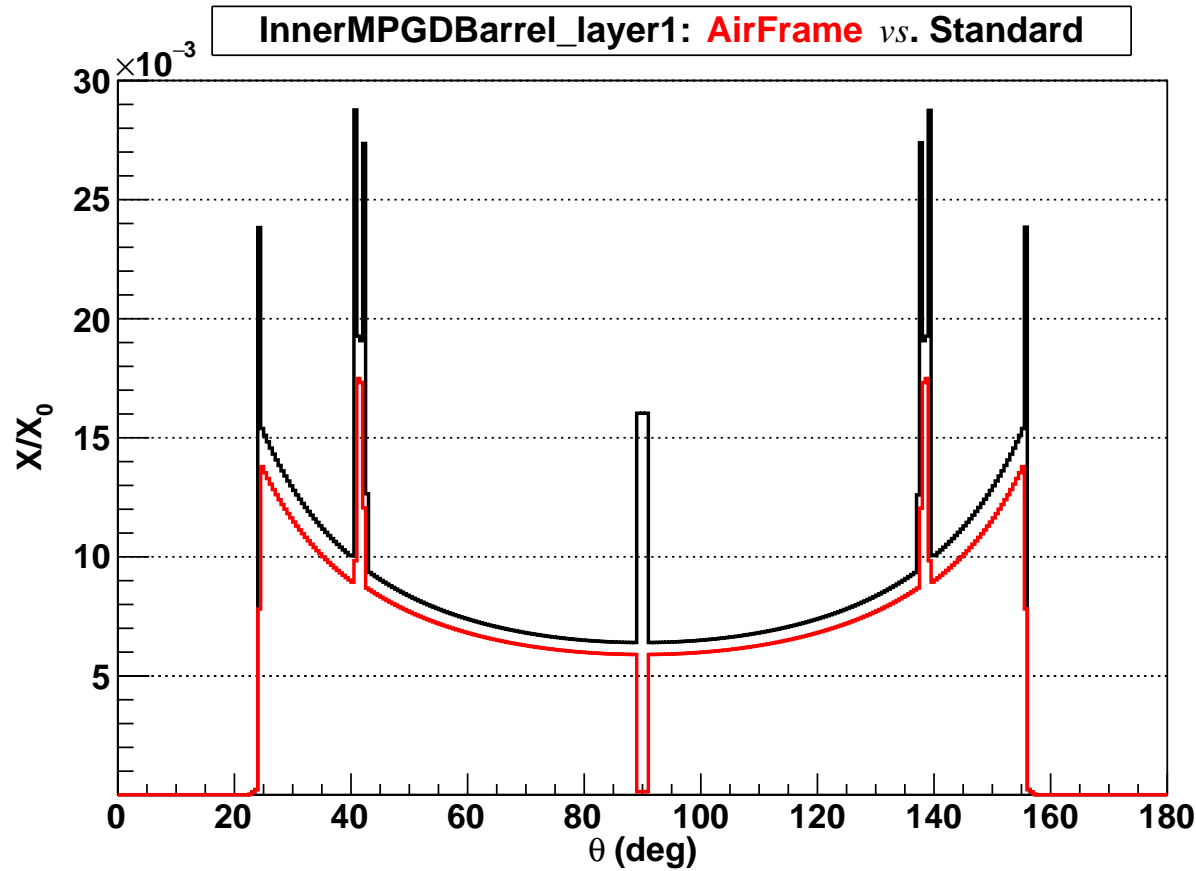


- 4 sectors, 8 modules each w/ 1 deg. overlap (+ 0.5 cm in radius every second module).

Outer sectors: + 1.0 cm in radius, to make space for signals-from/services-to inner (*not included yet*)

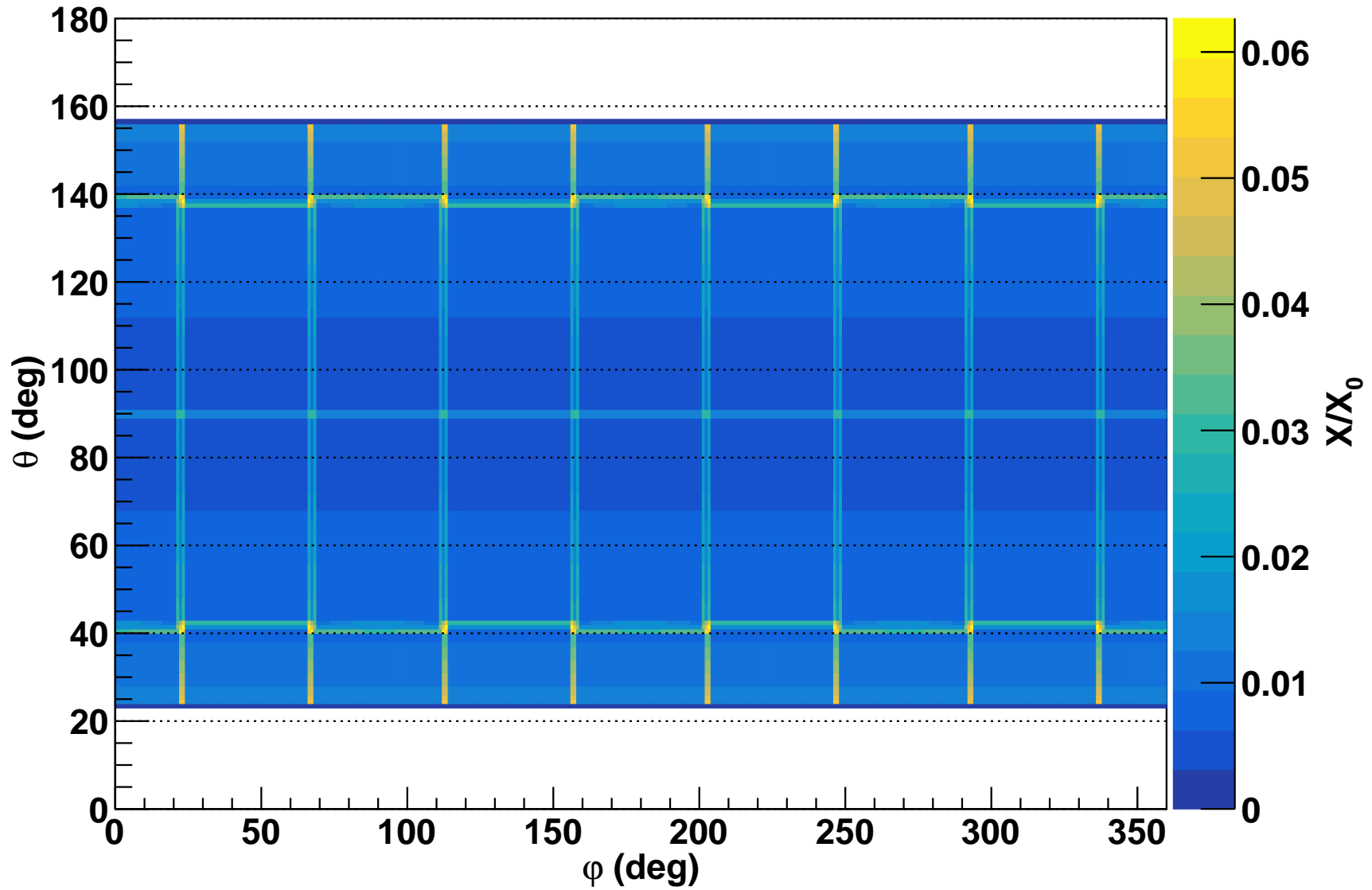
Inner sectors: gap of 0.2 cm in between.

Impact of Frame

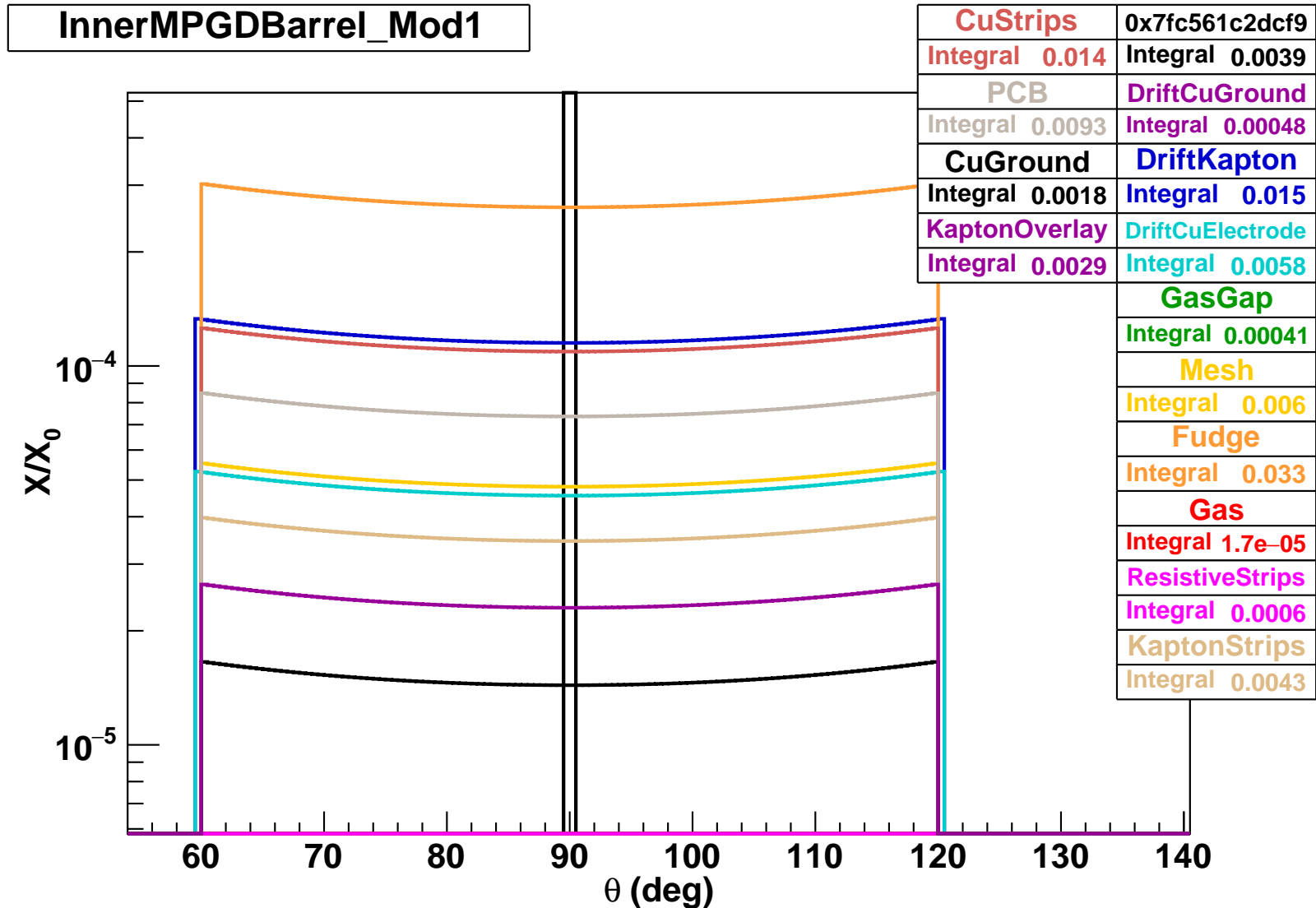


- `<frame material="CarbonFiber" .../>` → `<frame material="Air" .../>` ...
 Peak at $\theta = 90$ deg. → Dip due to gap between central sectors.
 ... and finer binning for both Standard and **AirFrame**

X/X0 as a f(φ, θ)



X/X₀ per module_component



- **Fudge**(570μm Kapton) > **DriftKapton**(250 μm Kapton) > **CuStrips**(12 μm Cu)

No support material is here, so fudge factor to bring material budget to ~0.5%

To Do

- Add signal-cables-from/services-to inner sectors.
- Digitisation: strips, as opposed to pixels.