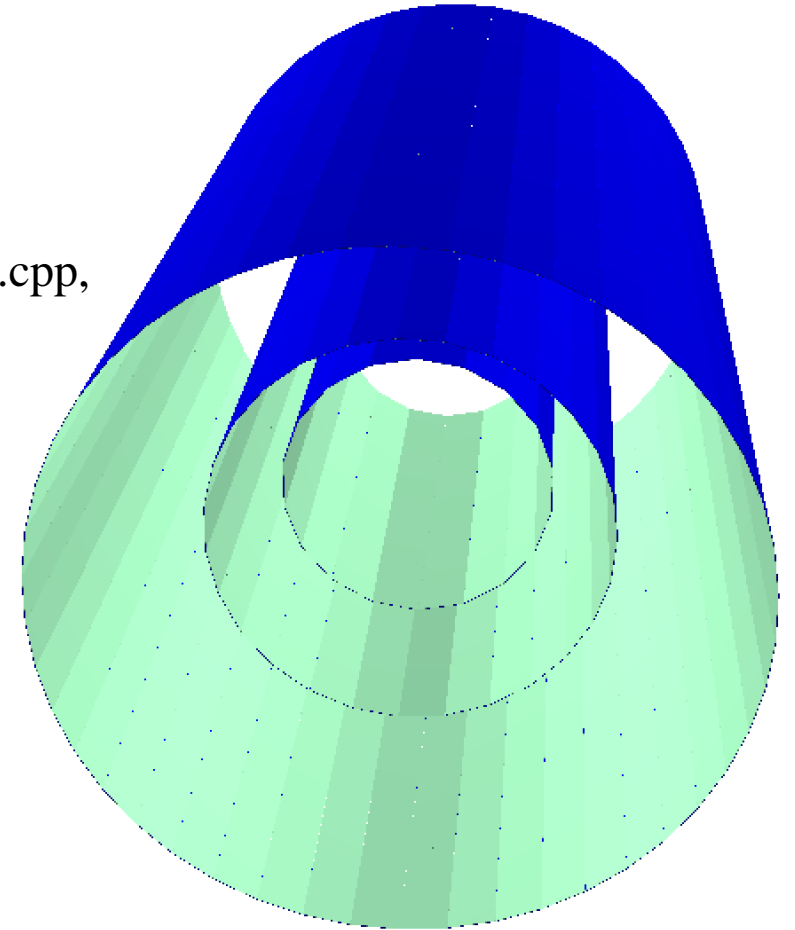


Staggered Staves Geometry Construction for CEPCSW

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- Staggered staves geometry construction implemented in CEPCSW, reconstructed by
 - ✓ **MarlinTrk**: ILCSoft tracking maintained by Chengdong Fu
- ITKB geometry is simple before
- New geometry ported from Hao Zeng SiTrackerStaggeredLadder_v01_geo.cpp, supervised by Chengdong Fu

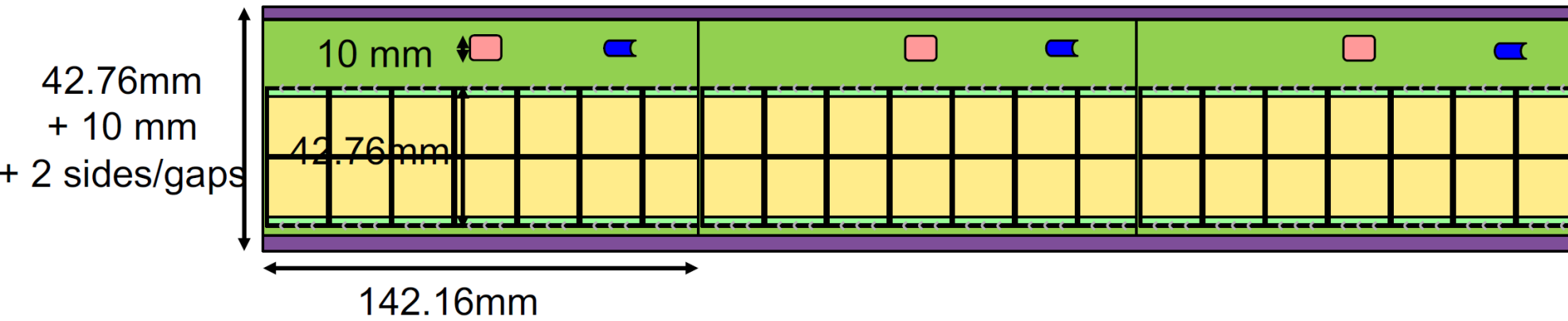


Tracker parameters (mm)

VXD			ITKE & OTKE				ITKB & OTKB			TPC		
layer	Half-Z	R	layer	Inner-R	Outer-R	Z	layer	Half-Z	R	Inner-R	Half-Z	Outer-R
L11	130	12.459	ITKE1	75	240	500.5	ITKB1	500.5	240	600	2900	1800
L12	130		ITKE2	101.9	350	715	ITKB2	715	350			
L21	247	27.892	ITKE3	142.6	600-5	1001	ITKB3	1001	600-5			
L22	247		ITKE4	214	600-5	1500	OTKB	2900	1800			
L31	374.5	43.792	OTKE	405.7	1810	2903						
L32	374.5											

➤ Set the radius of ITKB = 595 mm to avoid overlap

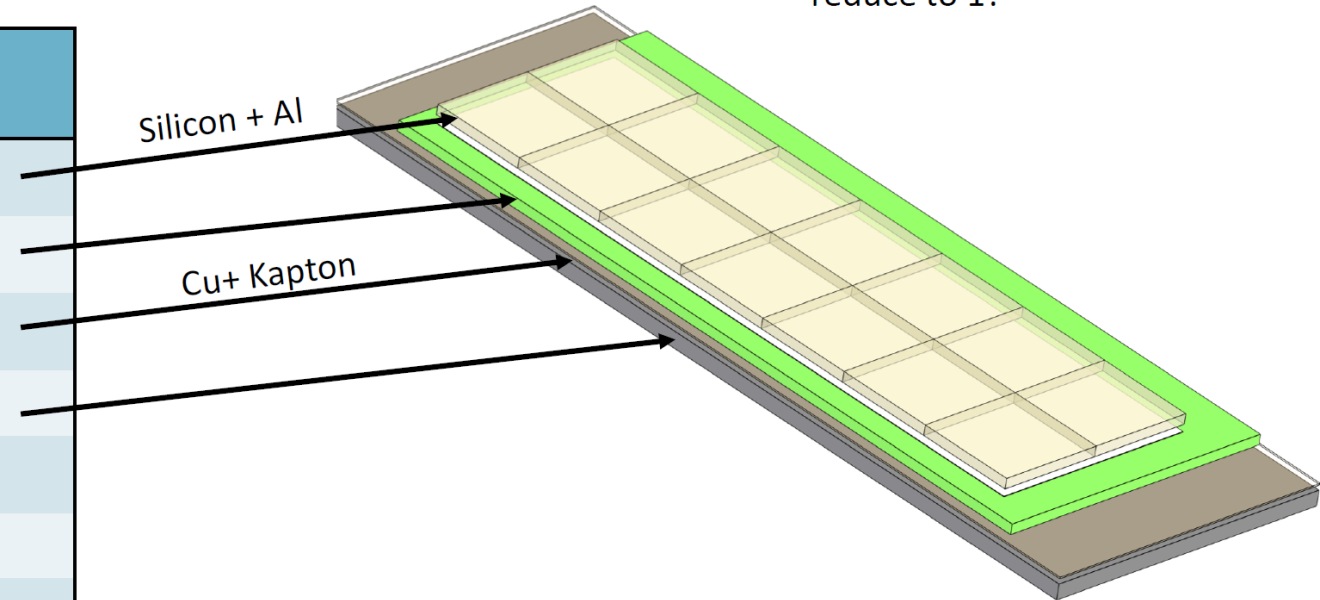
ITKB Sensor Stave



IpGBTx: W=9, L=9
Optical connector: W=10, L=20

1 IpGBT provides 28×0.32,
14×0.64, or 7×1.28 Gbps
DATA links
=> 2 IpGBT needed for
current bkg rate; may
reduce to 1?

	Thickness (mm)	Radiation Length [%X0]
Pixel Sensor	0.150	0.18
HybridFlex	0.200	0.28
Kapton Tape	0.100	0.14
BareStave	4.000	0.21
Optical connector	1.250	0.13
IpGBTx	4.000	0.07
Total		1.01

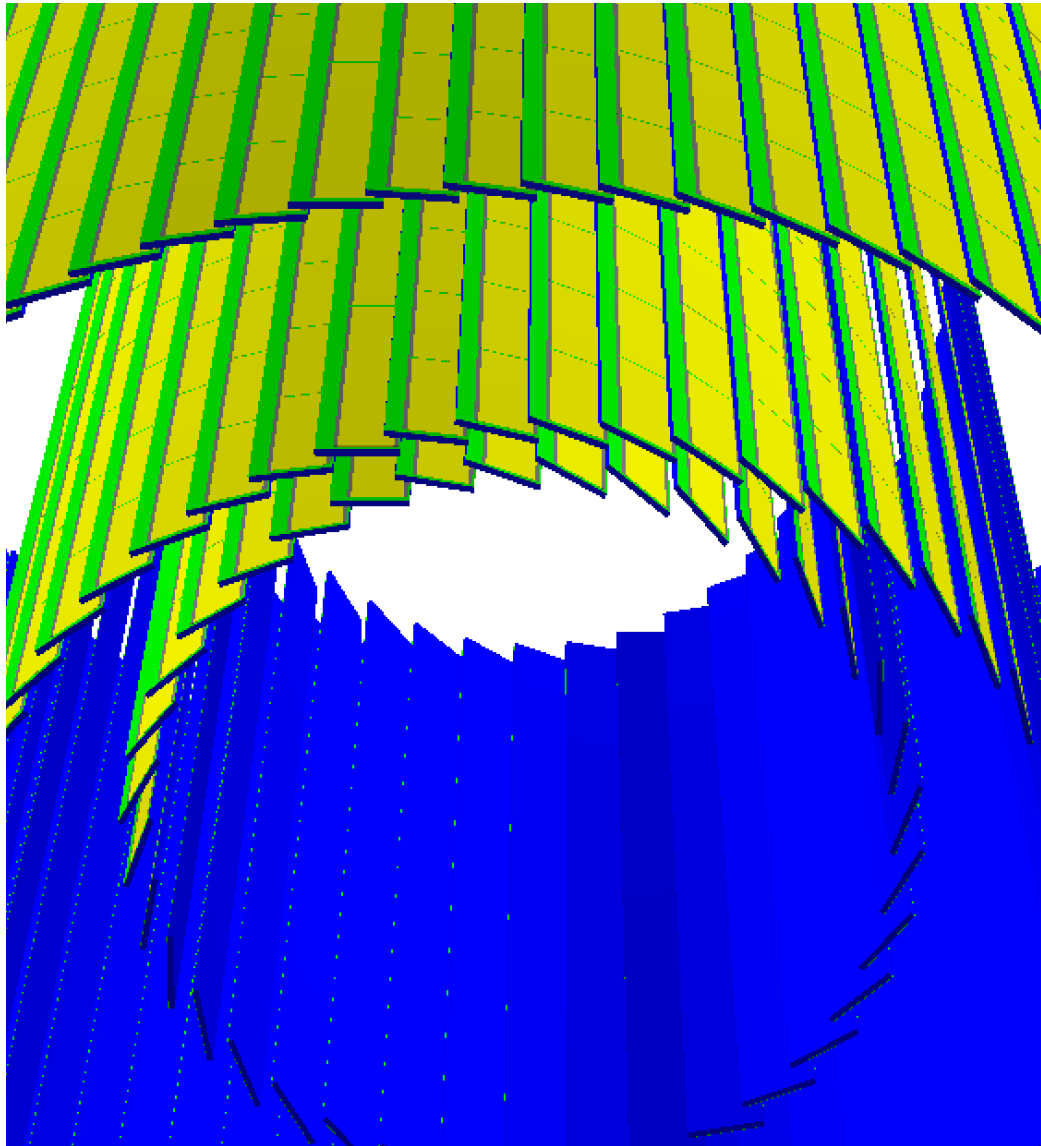


```
sensorWidth = 40 #mm  
theta = 2*atan(sensorWidth /2/radius)  
nStaves = ceil(2*pi/theta)
```



	Modules/Stave	Staves
ITKB1	7	36
ITKB2	10	52
ITKB3	14	88

Geometry Display



- 3 layers:
 - ✓ Support is Blue
 - ✓ PCB&Flex is Green
 - ✓ Sensor is Yellow
- Connectors not displayed
 - ✓ Debugging
- Stave offset of each layer need further trimming