

Update of Straw Tracker End-cap Geometry in SpdRoot

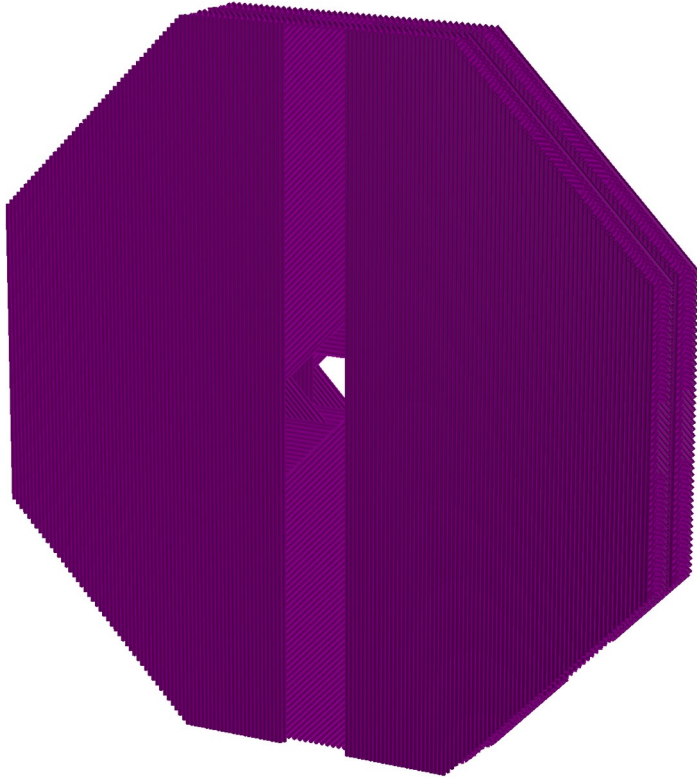
Ruslan Akhunzyanov

LHEP JINR

SPD Physics & MC Meeting
20 November 2024

Overview

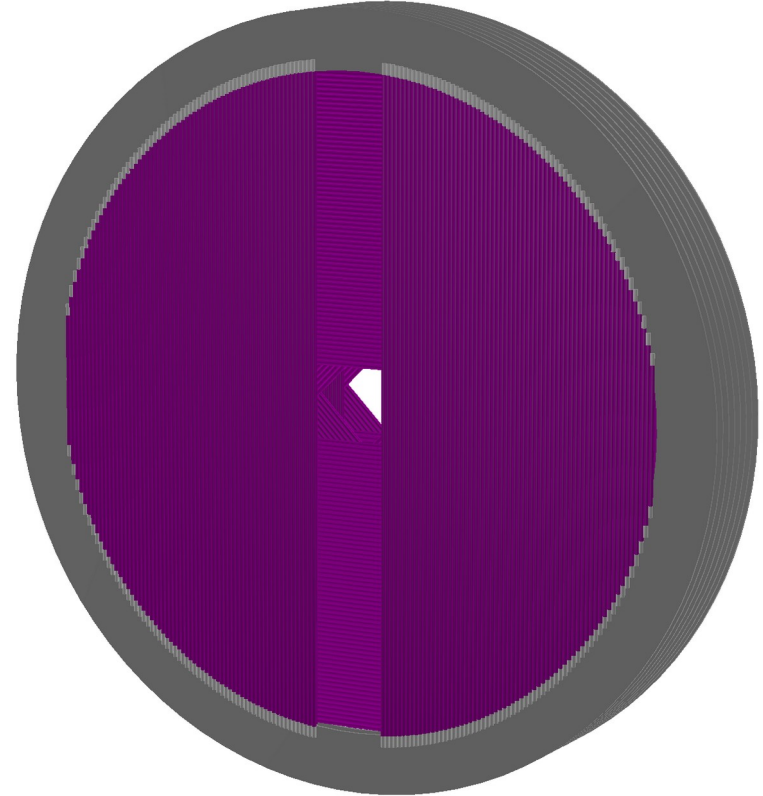
current geometry (outdated)



- octagonal form
- order of planes: X-U-Y-V-X-U-Y-V
- no passive elements

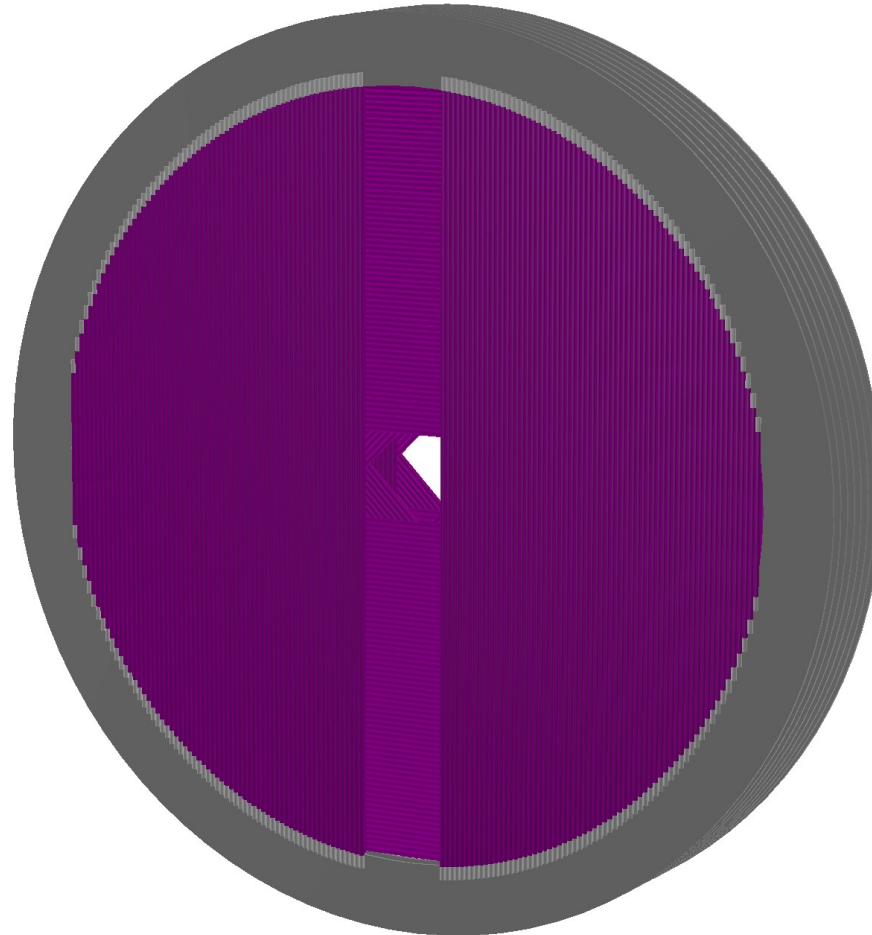


new geometry



- circular form
- order of planes: X-Y-U-V-X-Y-U-V
- passive elements are added
- arrangement of straws in plane changed

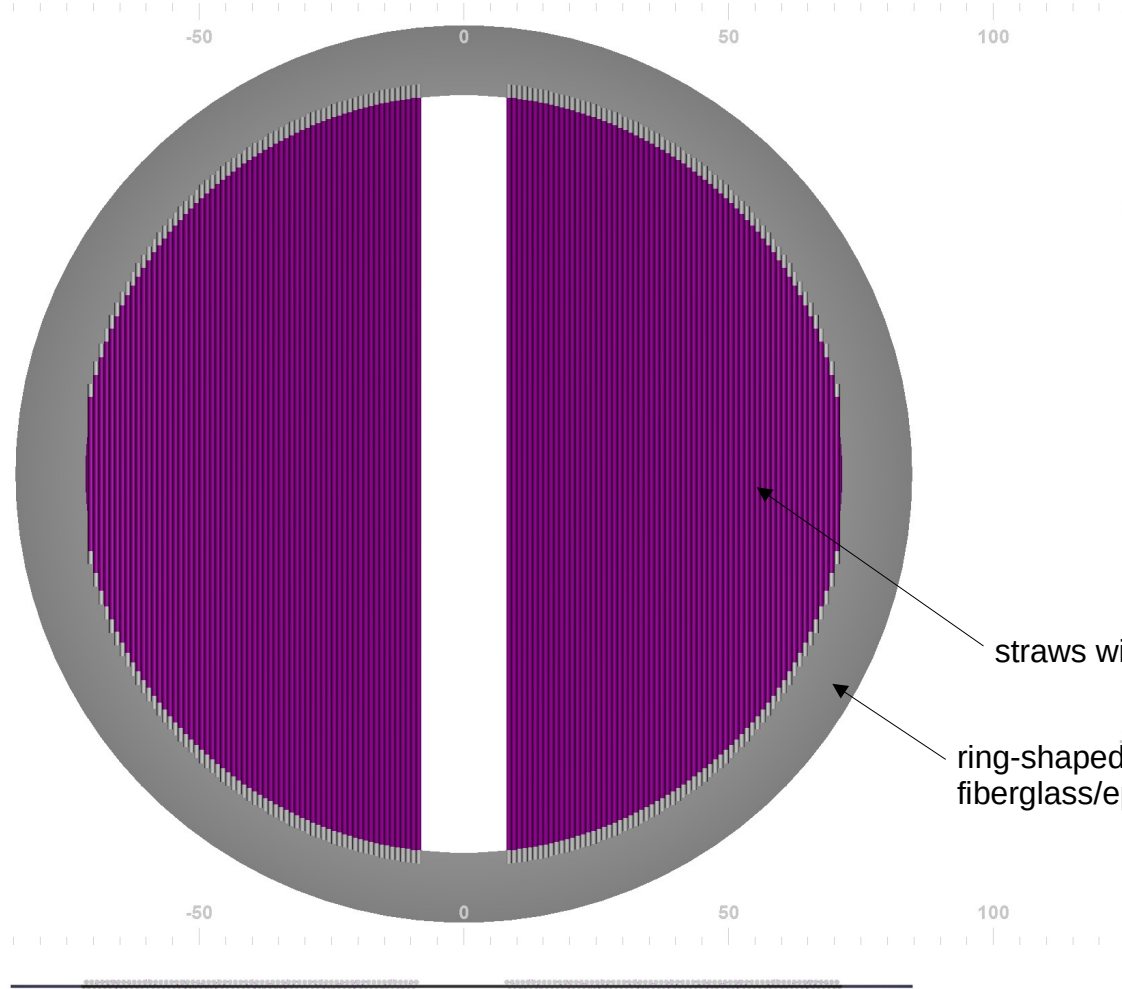
General view



8 planes

Total length = 24 cm

One plane



Ring-shaped frame:

$R_{in} = 71.5 \text{ cm}$

$R_{out} = 84.7 \text{ cm}$

thickness = 0.6 cm

beam gap width = 15 cm

Straw:

$\varnothing = 1 \text{ cm}$

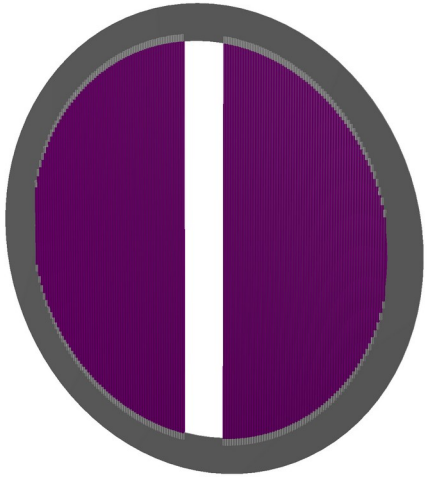
end plug length = 2.5 cm

straws with end plugs

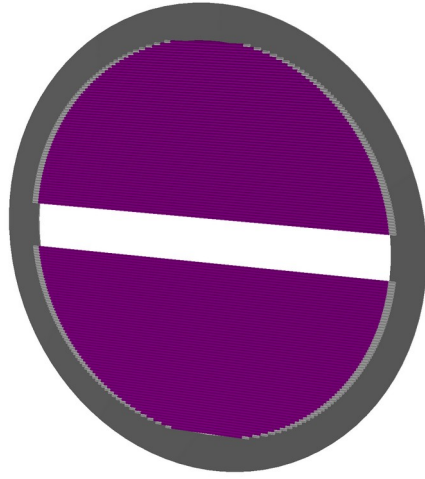
ring-shaped frame made from
fiberglass/epoxy composite



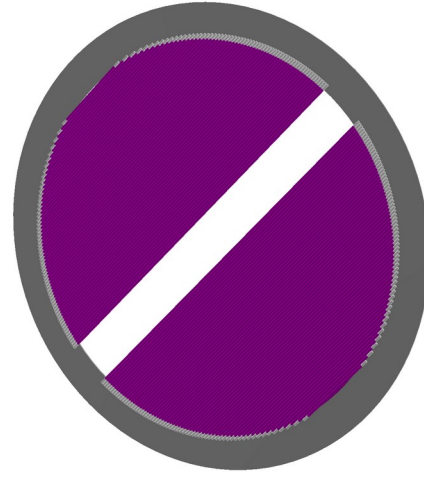
Orientation of planes



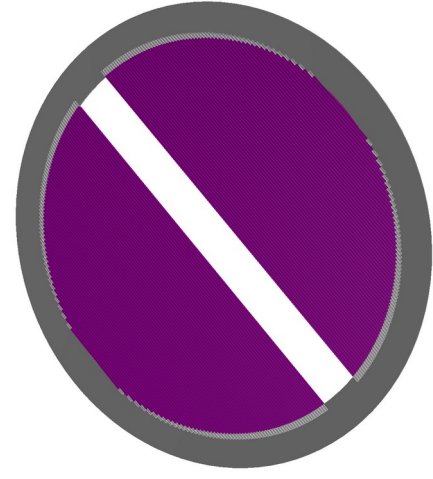
X



Y



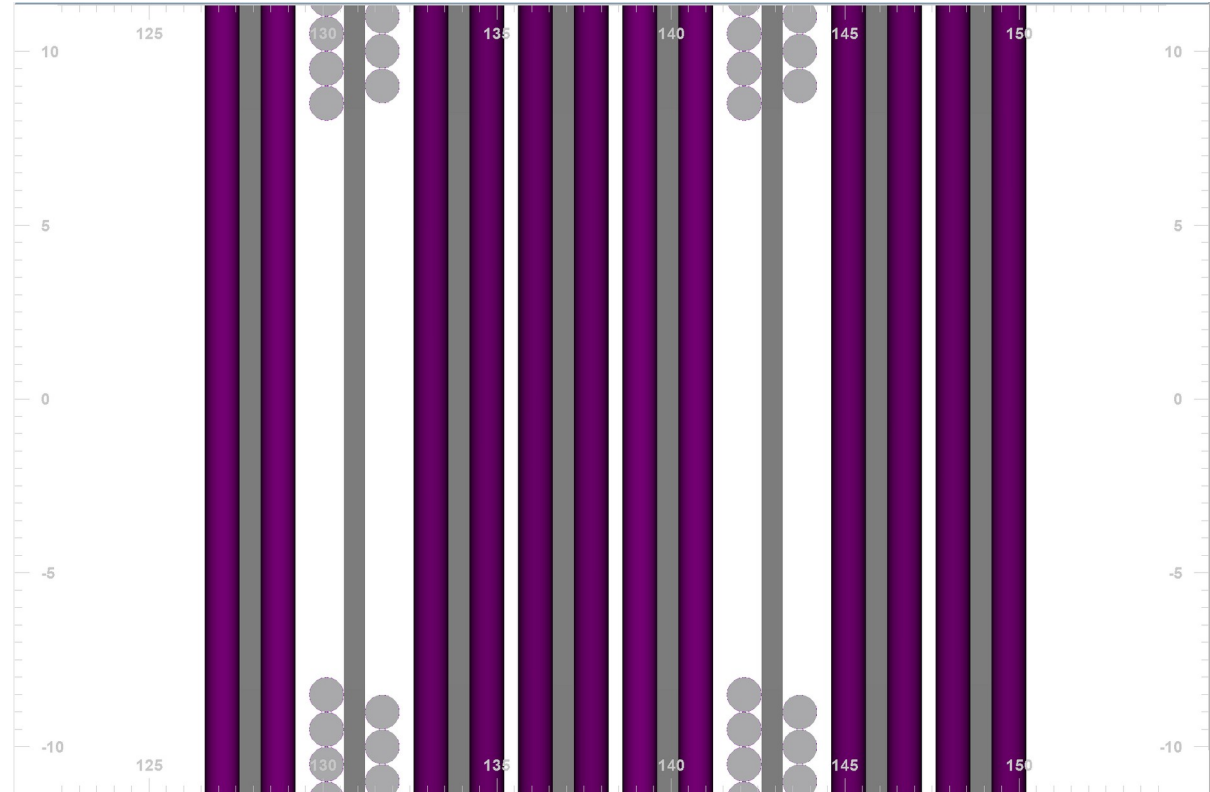
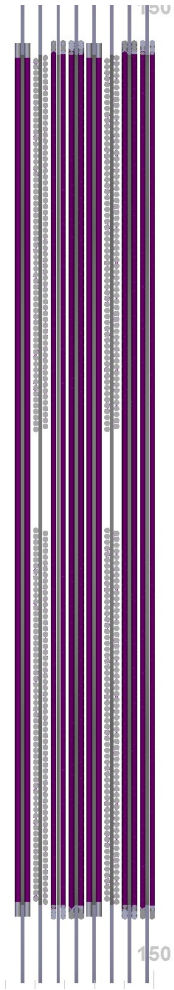
U



V

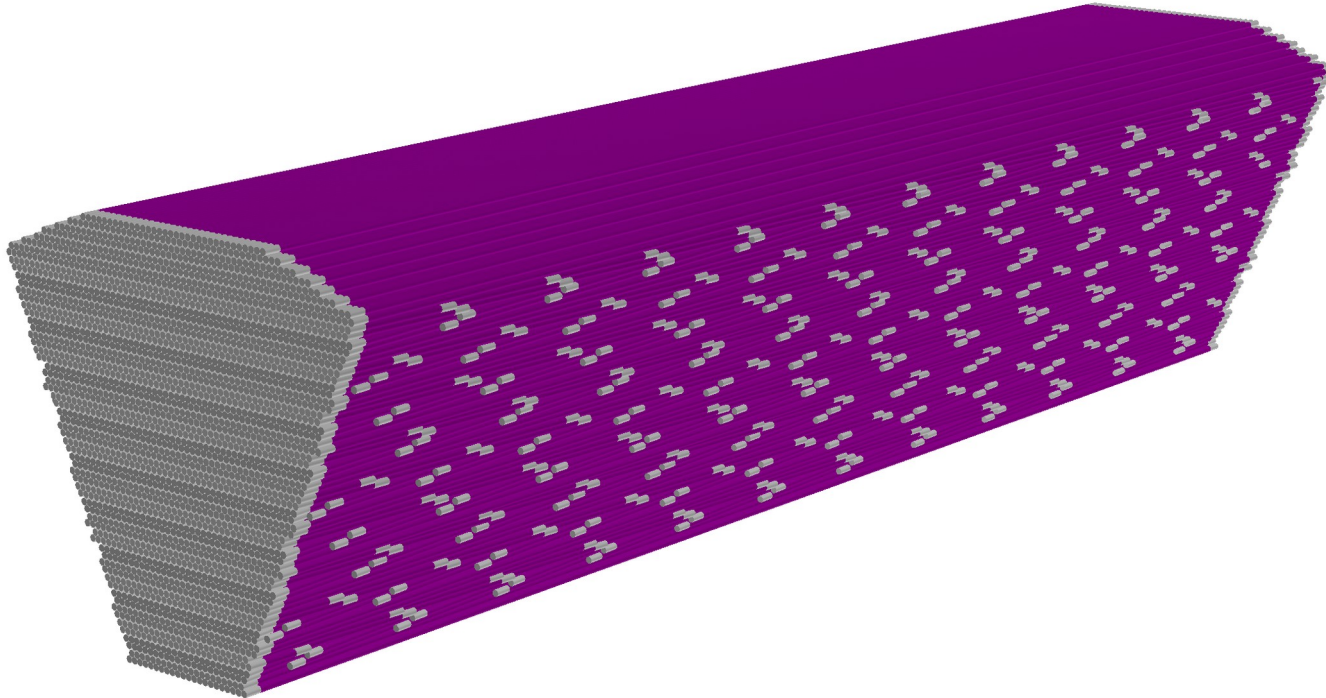
- Order of planes: X - Y - U - V - X - Y - U - V
- (Was: X - U - Y - V - X - U - Y - V)

View in Z-Y projection



Changes to Straw Tracker Barrel

- End plugs are also added to straws in barrel.



TODO

- Check how the changes in geometry affect acceptance, momentum resolution, etc.
- Commit to development branch

Thank you for your attention!