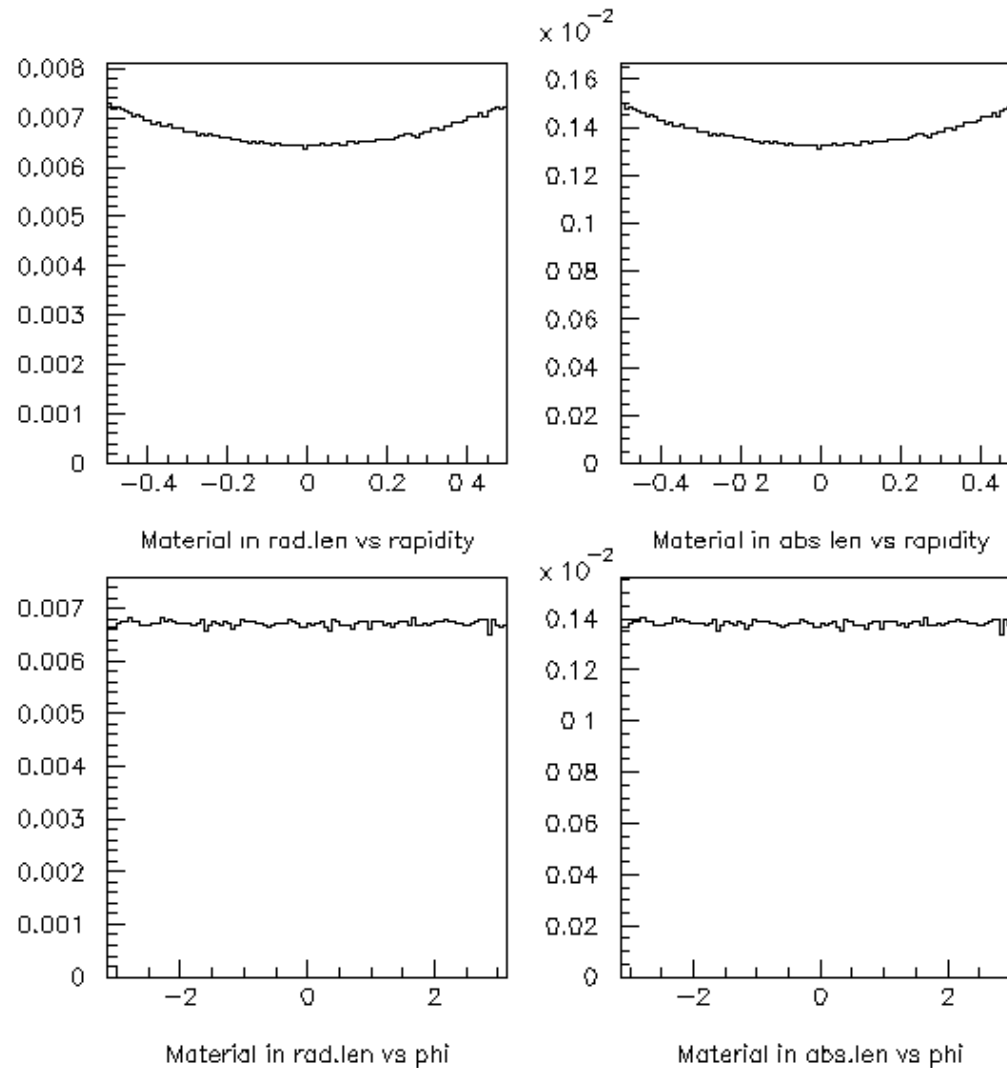


Material plots

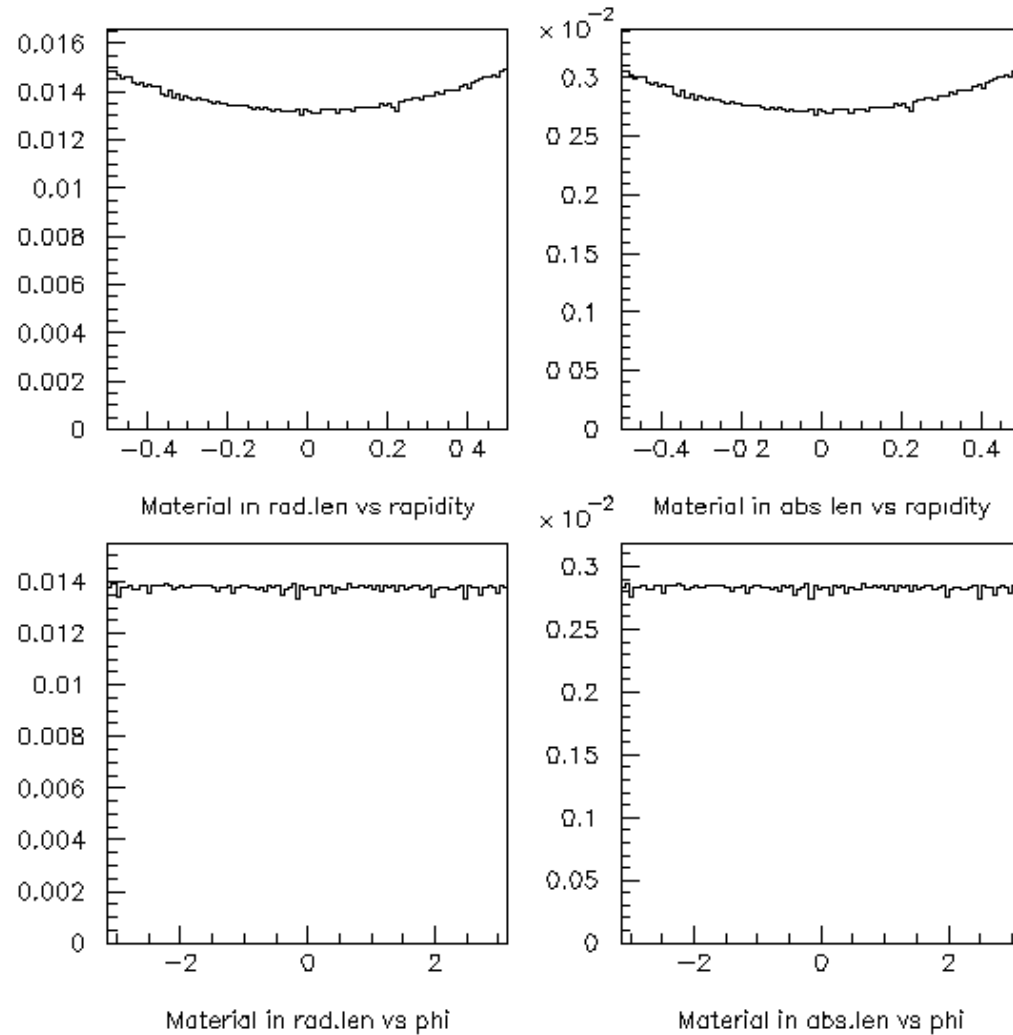
- Upgr 15 geometry
- used geantinos*
- $-0.5 < \eta < 0.5$
- Rmin and rmax variables to select PXL , IST, SSD, Beam Pipe independently or a combination

*a Geantino is an artificial particle from Geant which is used as a geometrical probe. It is only transported through your detector and does not interact with it.

PXL : Rmin=2.2cm Rmax =10cm

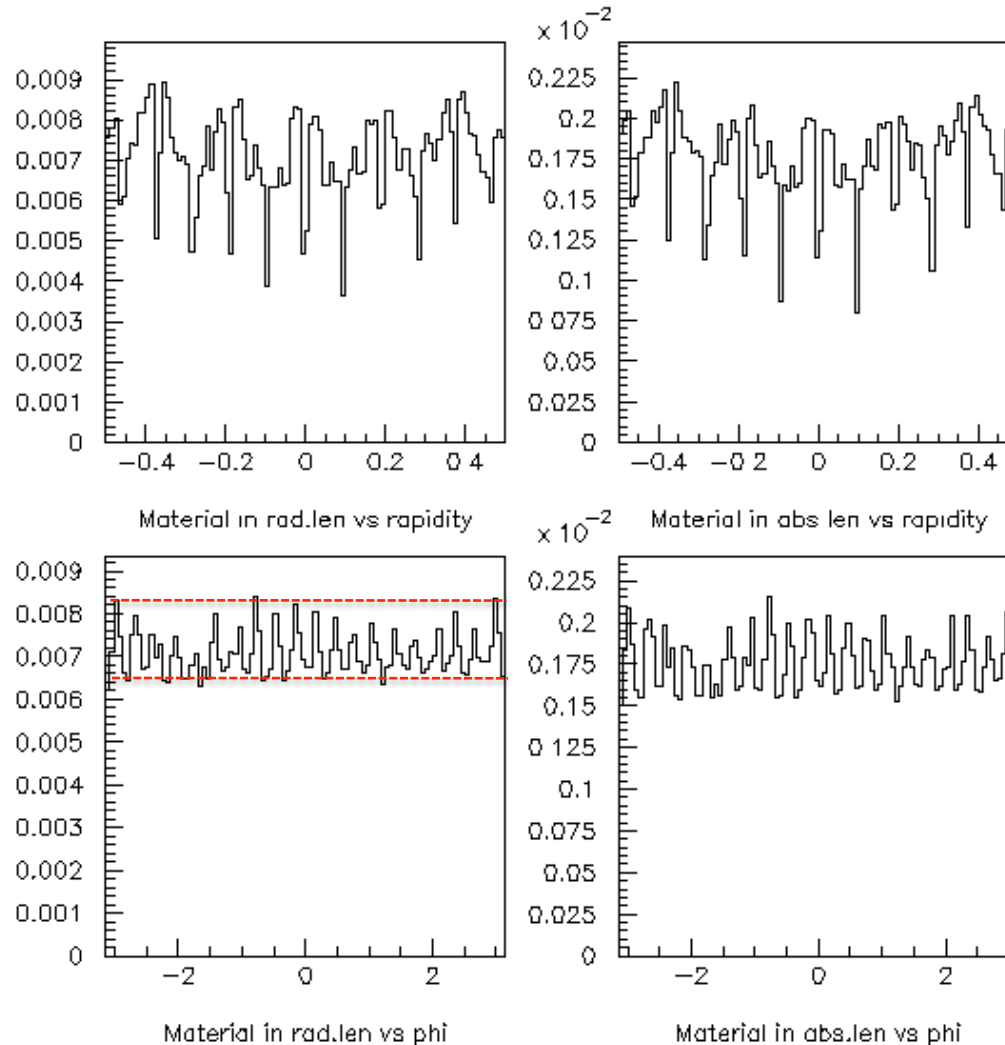


IST : Rmin=10cm Rmax =16cm



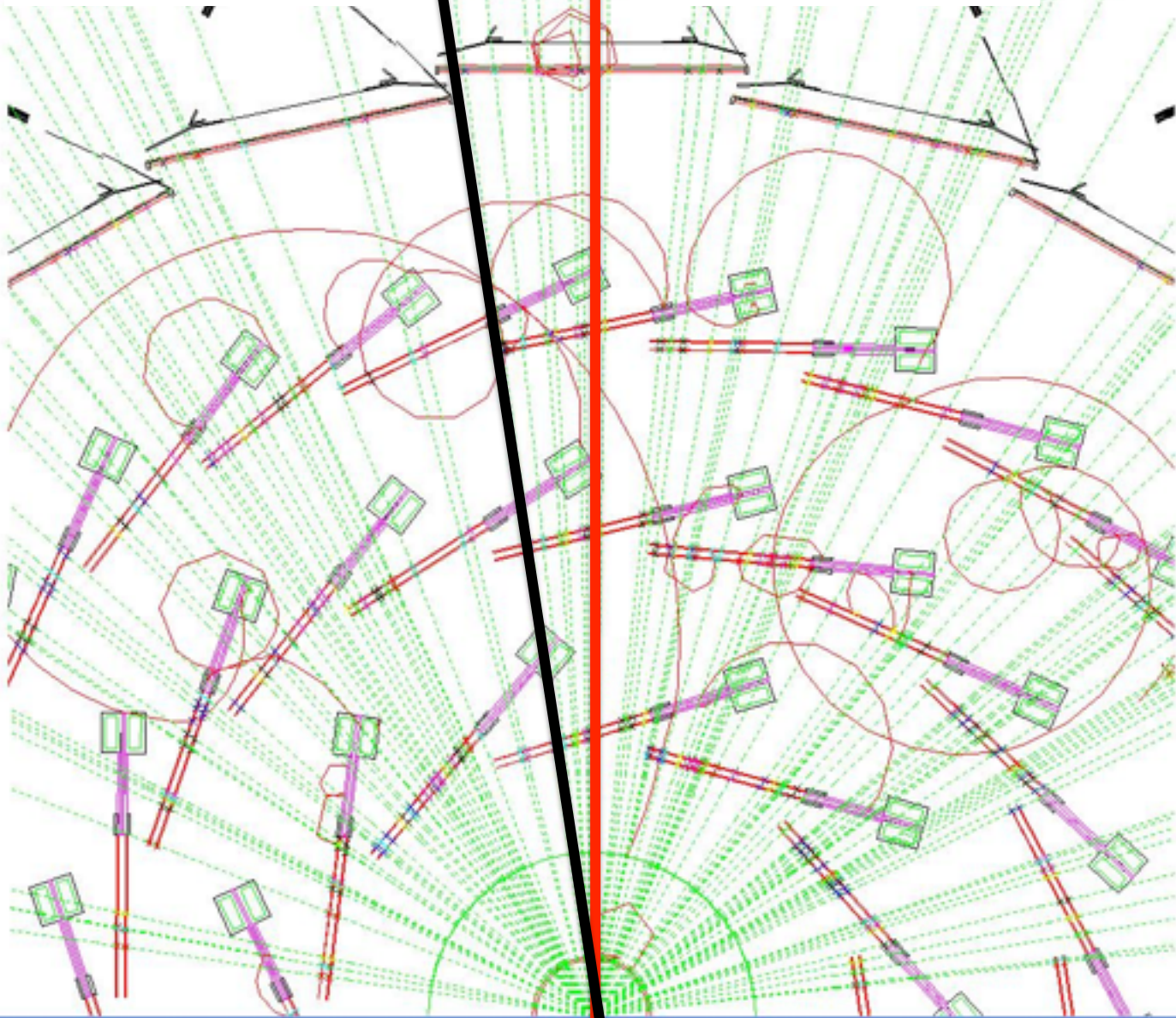
SSD : Rmin=20cm Rmax =25cm

- at the bottom left plot, we can count ~20 peaks, denoting the 20 ladders
- The variation between a peak and a gap is $0.0082 - 0.0066 = 0.0016$
- This could correspond to the case of a track crossing the entire ladder with a track crossing just the edge (next slide)

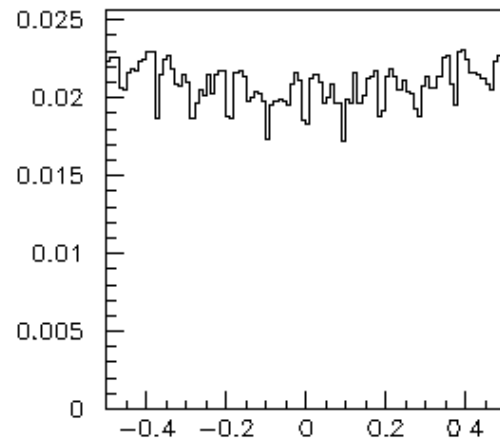


**Radiation
Length ~ 0.066**

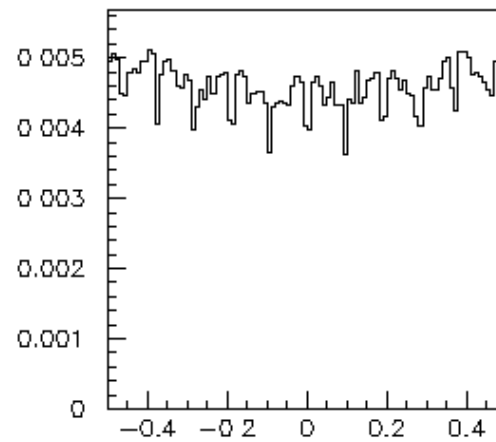
**Radiation
Length ~ 0.082**



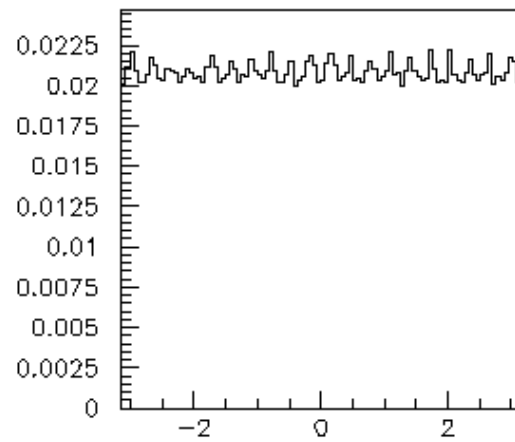
IST+SSD : Rmin=10cm Rmax =25cm



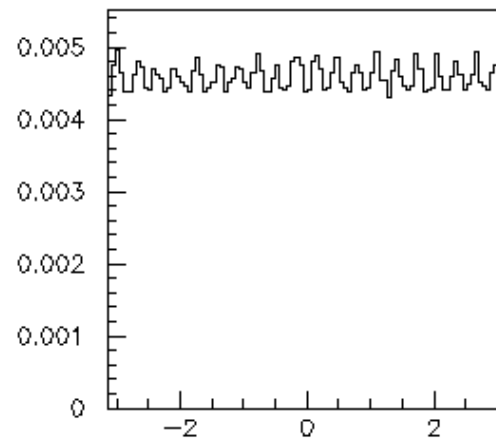
Material in rad.len vs rapidity



Material in abs len vs rapidity



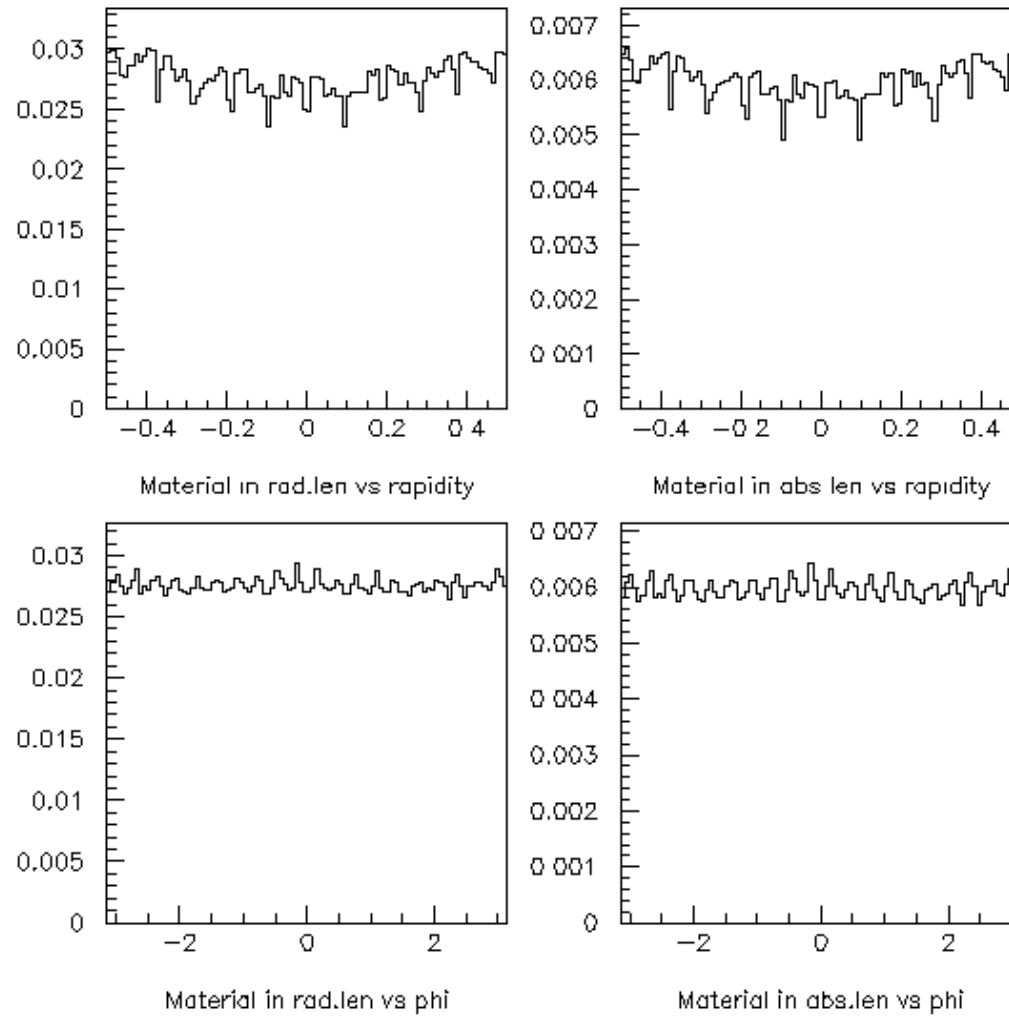
Material in rad.len vs phi



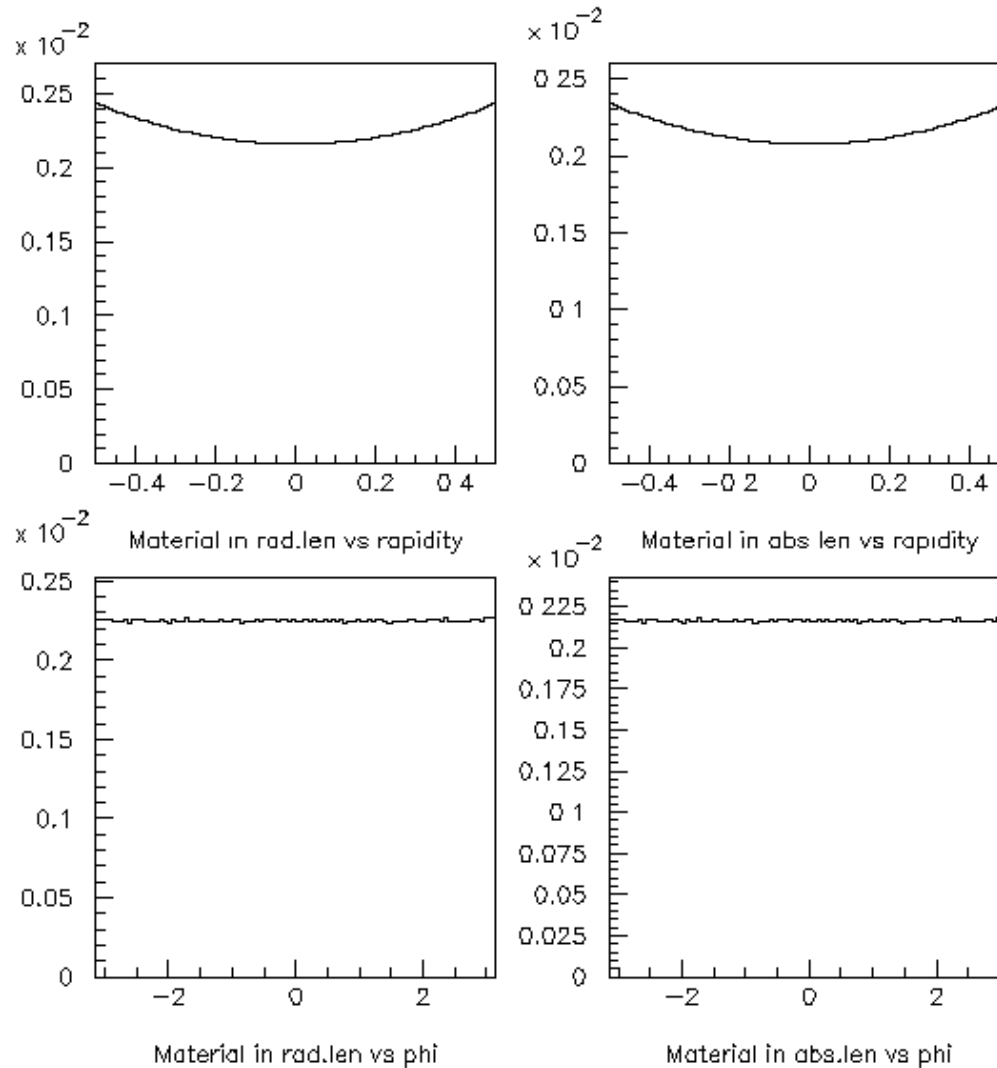
Material in abs.len vs phi



PXL+IST+SSD : Rmin=2.2cm Rmax =25cm



Beam Pipe: $R_{min}=1\text{cm}$ $R_{max}=2.2\text{cm}$



summary

system	Beam pipe	PXL	IST	SSD	PXL+IST+SSD
Rad. length	0.0022	0.0068	0.014	0.007	0.028