

Geometric description of DIRC in SpdRoot

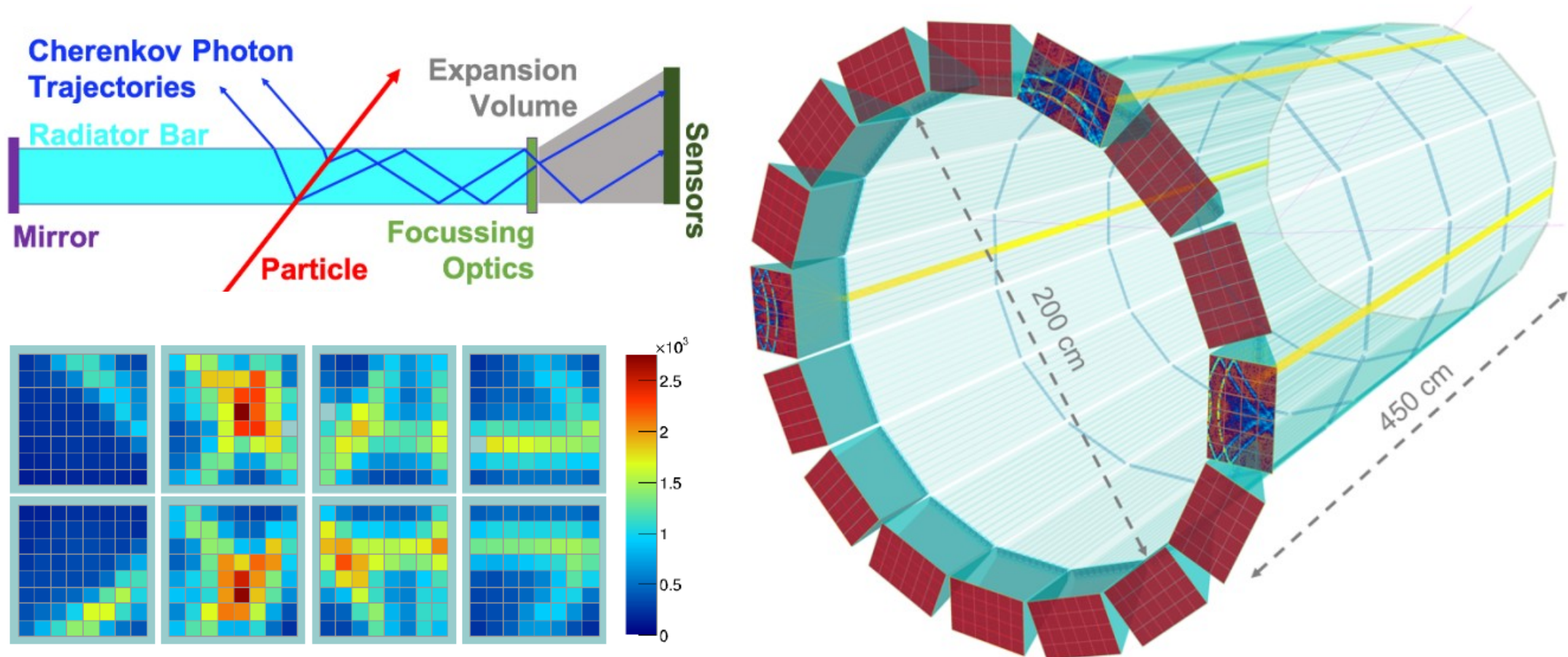
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DIRC - Detection of Internally Reflected Cherenkov Light

Separate kaons and pions with at least 3 standard deviations for momenta up to 3.5 GeV/c

The PANDA Barrel DIRC Detector at FAIR



DIRC in SpdRoot: parameters

Number of module: 32

Module size = 77 (T) x 15 (W) x 3100 (L) mm

Material: SiO₂ fused Silica ("Quartz")

Atomic and nuclear properties of materials:

Silicon dioxide (fused quartz) (SiO₂)

Quantity	Value	Units	Value	Units
<Z/A>	0.49930			
Density	2.20	g cm ⁻³		
Minimum ionization	1.699	MeV g ⁻¹ cm ²	3.737	MeV cm ⁻¹
Nuclear collision length	65.2	g cm ⁻²	29.64	cm
Nuclear interaction length	97.8	g cm ⁻²	44.47	cm
Pion collision length	91.9	g cm ⁻²	41.77	cm
Pion interaction length	128.8	g cm ⁻²	58.56	cm
Radiation length	27.05	g cm ⁻²	12.29	cm

DIRC in SpdRoot: geometry

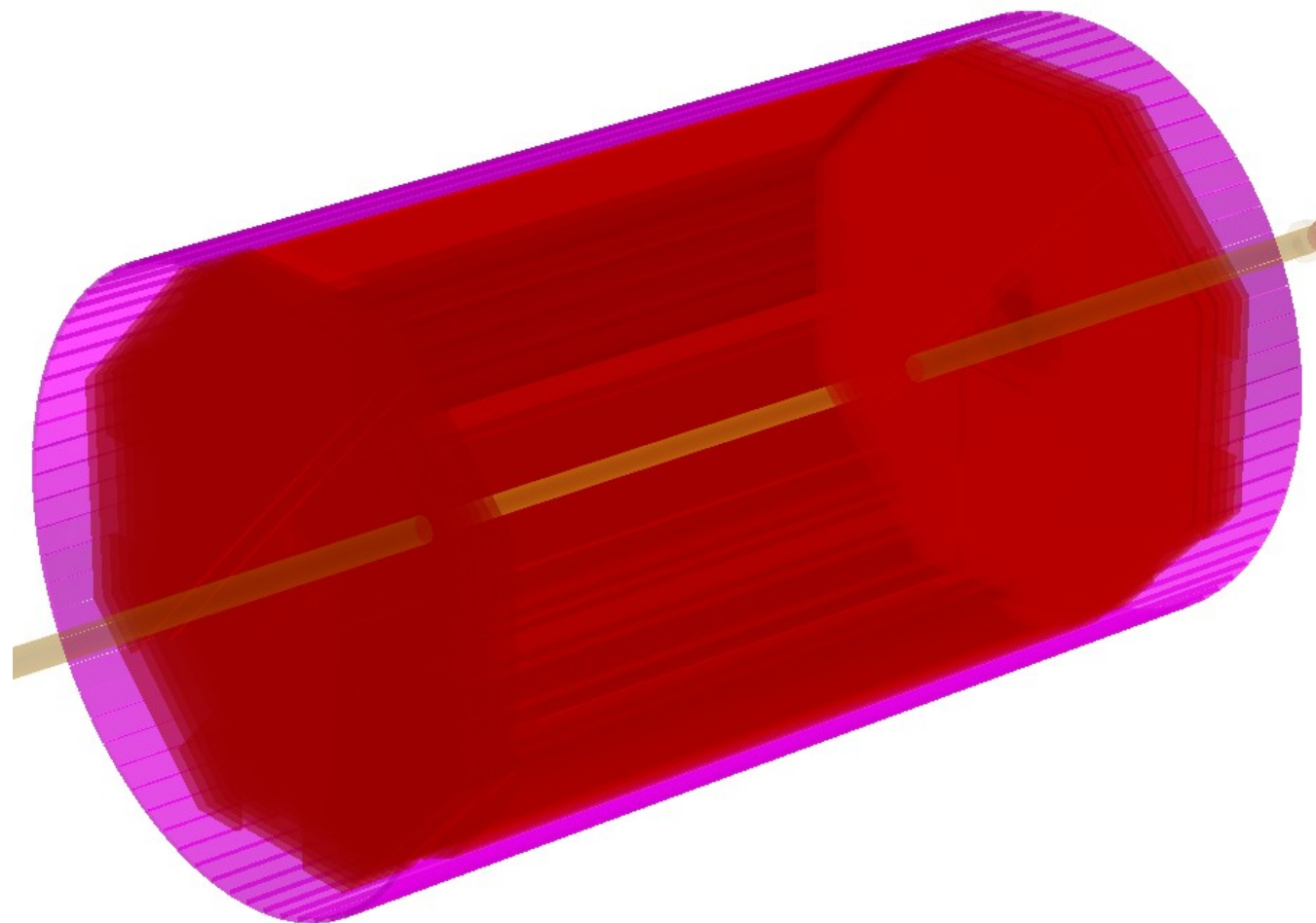
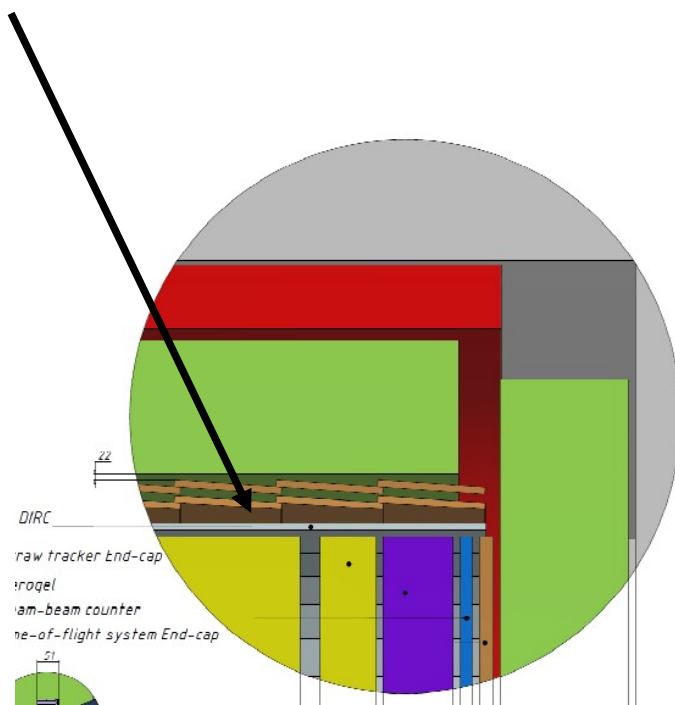


Module size = 77 (T) x 15 (W) x 3100 (L) mm

Number of module: 32

R: 907 mm

Location: between STRAW and TOF



DIRC in SpdRoot: usage

Repository: <https://git.jinr.ru/aivanov/spdroot>

Branch: dirc

Simulation

```
SpdDirc*   dirc   = new SpdDirc();  
run->AddModule(dirc);
```

Reconstuction

```
SpdDircMCHitProducer *dirc_hits_producer = new SpdDircMCHitProducer();  
Run->AddTask(dirc_hits_producer);
```

Conclusion

- 1) The DIRC detector was implemented in SpdRoot
- 2) To study influence of DIRC on clusters size in ECAL barrel

Backup

