



IMAGING WITH LENS OR MIRROR

Rok Pestotnik

Jožef Stefan Institute, Ljubljana, Slovenia

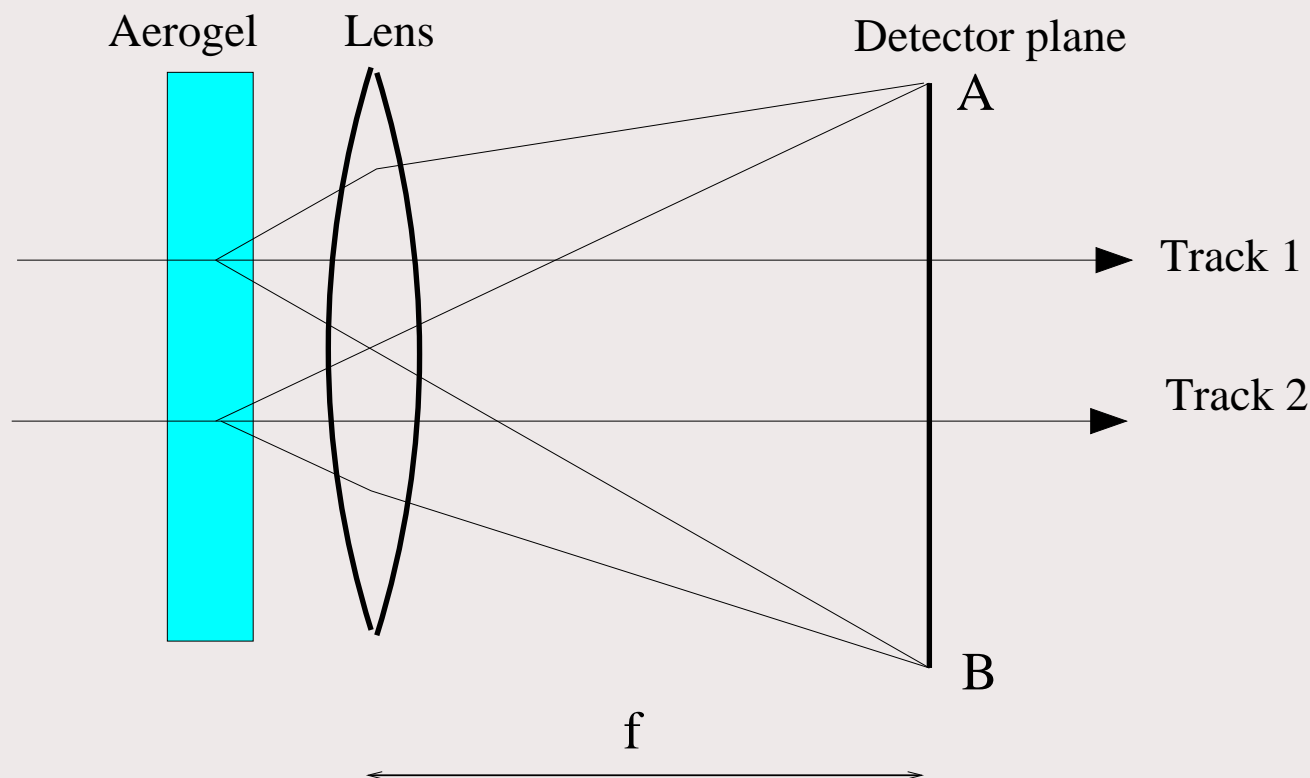
May 7, 2004

Belle ACC meeting

- ❖ Experimental situation
- ❖ Resolutions
- ❖ Accumulated hit distributions



Foreseen experimental setup



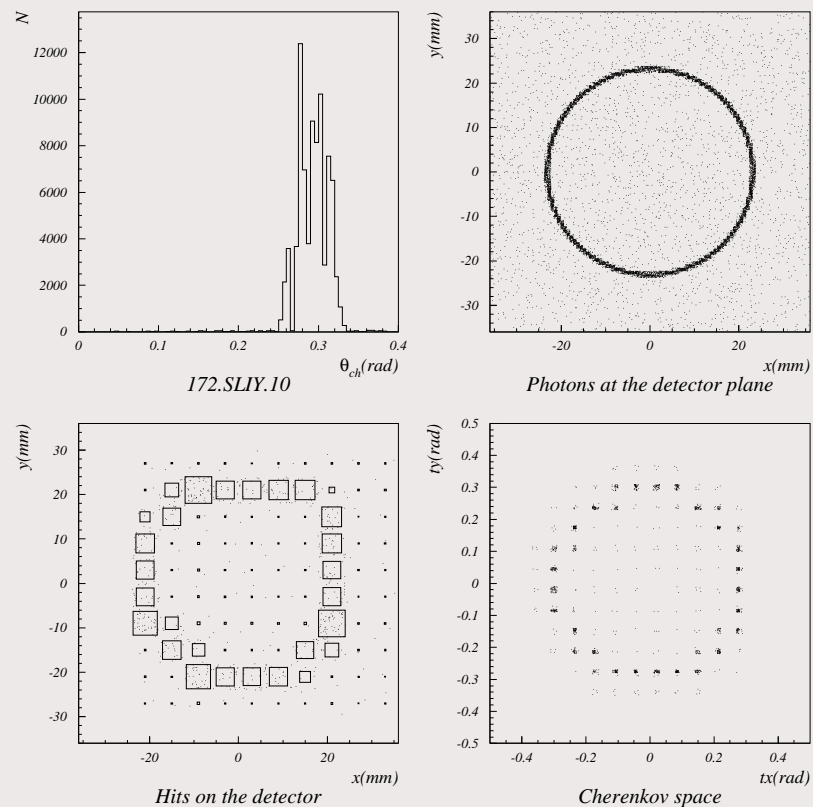
Ideal optics

- ❖ Parallel rays intersect in the same point on the focal plane
- ❖ Photons emitted from different positions on in the aerogel get focused in the same point
- ❖ All beam particles are almost parallel → all rings are on the same position on the photon detector



Ray tracing simulation

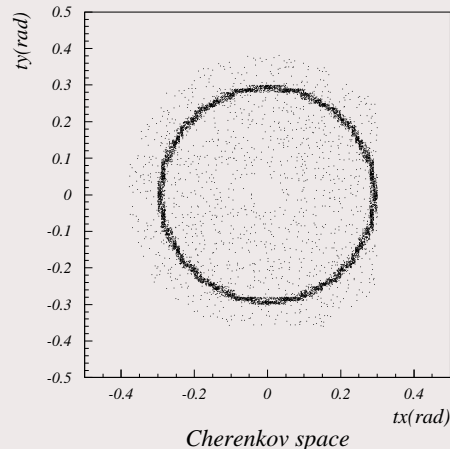
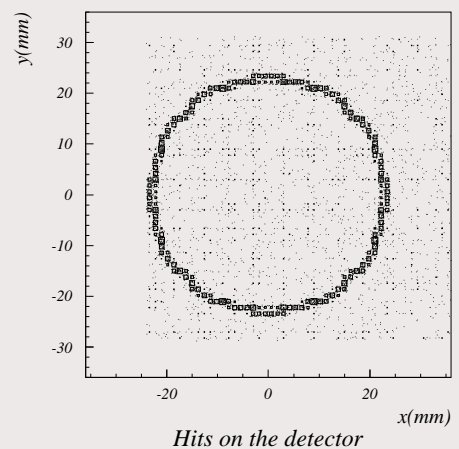
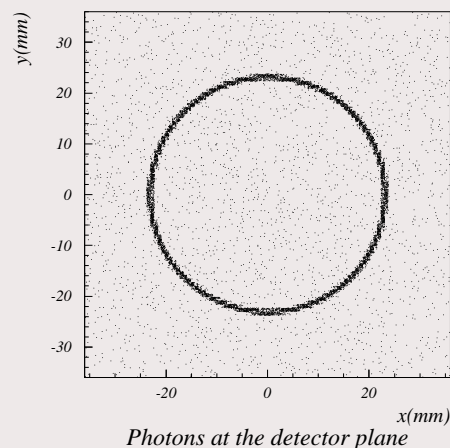
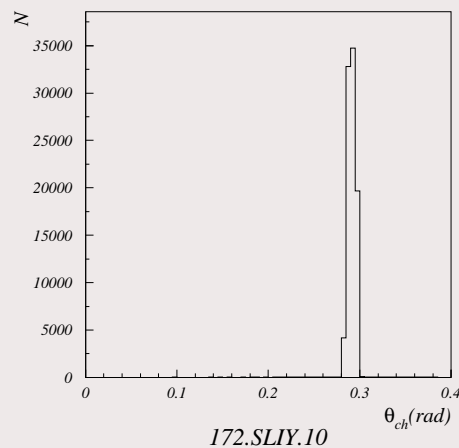
- ❖ Lens $f=75$ mm to image full ring on 72 mm x 72 mm area
- ❖ Cherenkov angle distribution is not smooth due to small number of channels contributing to the picture





Ray tracing simulation - cont.

Cross check: With increased number of channels the resulting distribution is narrower as expected and smooth

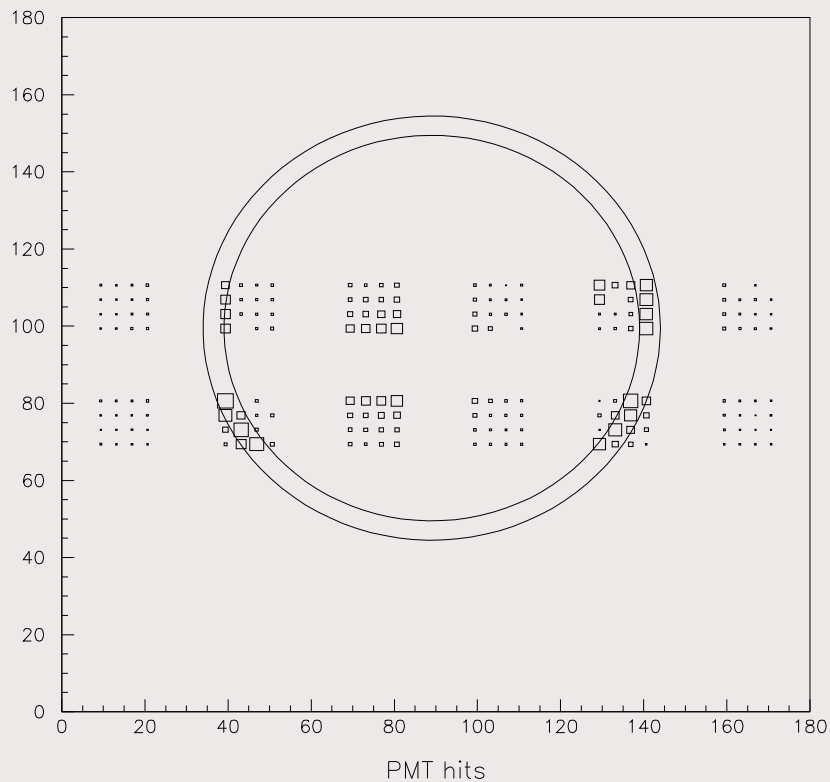




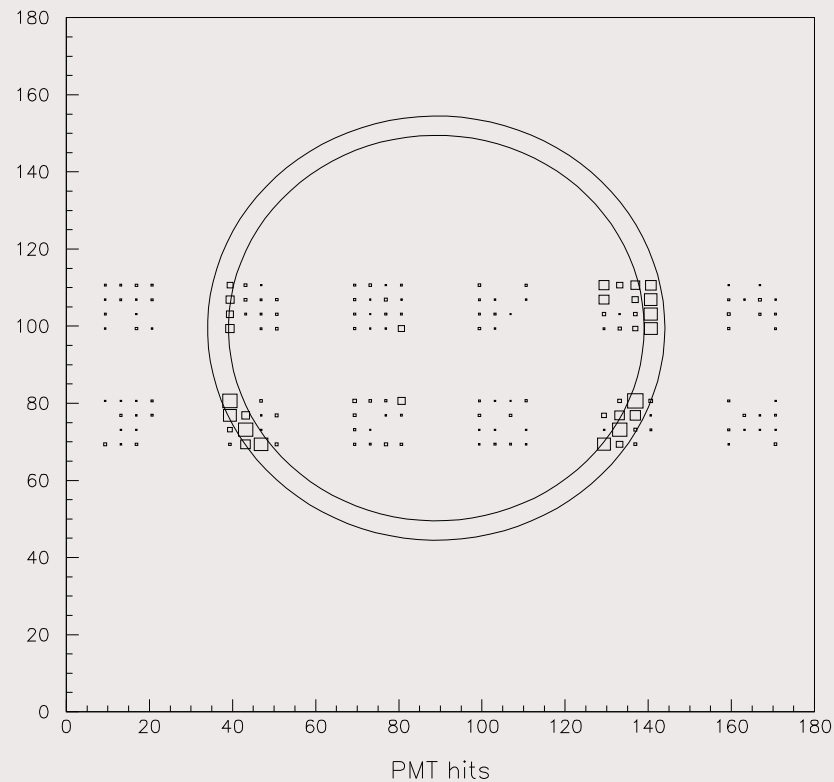
Run 98 March 2004 Beamtest - RICH2 with lens $f=17$ cm

Hits on the RICH2 detector:

All tracks



Tracks limited to the central ± 10 mm





Conclusions

- ❖ Focusing with a lens is an attractive way of imaging on a small detector with limited available space
- ❖ With a beam with almost no divergence all rings coincide → always the same pads hit, problems in resolution studies
- ❖ Maybe the new beam is different?
- ❖ Accumulated rings: rings are always on the same spot, while particle impact point moves - overlap of track hits and ring hits in accumulated hit plots
- ❖ Solution: for accumulated ring plots restrict the analysis to a pencil beam