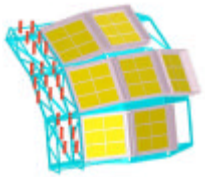
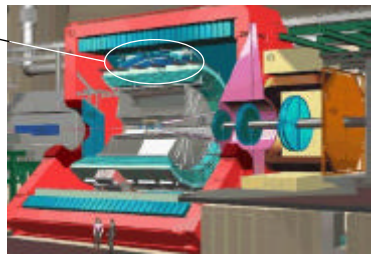
Development of CsI photocathodes for Ring Imaging CHerenkov detectors

Thin Film coating

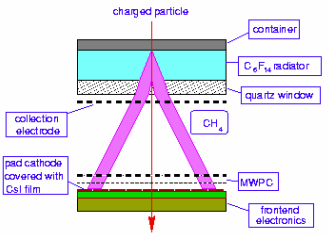
ALICE HMPID/RICH:





7 photodetectors modules each with 6 CsI PCs.

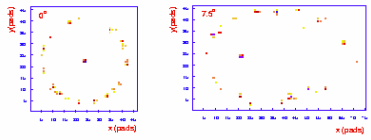
Total area 12 m^2



A proximity focusing RICH detector for High Momentum Particle Identification

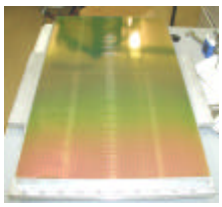
Photon detector:

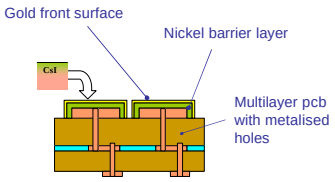
MWPC with CH_4 at atmospheric pressure in front of a CsI thin film reflective photocathode



Photocathodes:

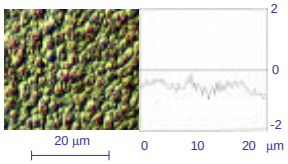
Modules of 64 x 45 cm2:





CsI substrate:

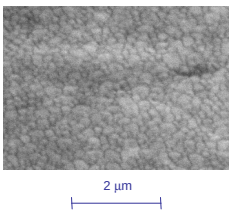
standard printed circuit board



- Ni and Au barrier layers on top of Cu pads (~8x8 mm^2)
- Standard Electro-plating technology

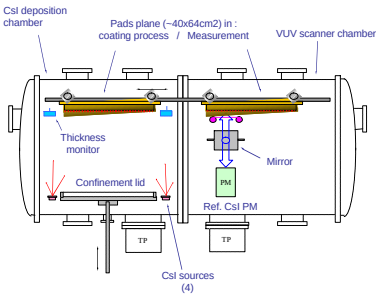
CsI thin film:

300nm thick, obtained by Physical Vapour Deposition process



Coating plant developed at CERN:

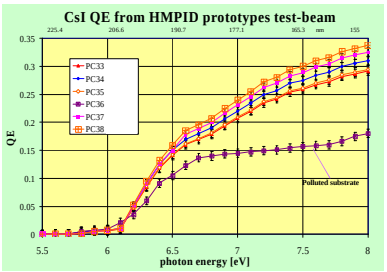
- Processing photocathode modules up to 60 x 60 cm^2
- Transfer facility of CsI films under inert gas
- In situ CsI QE evaluation under vacuum

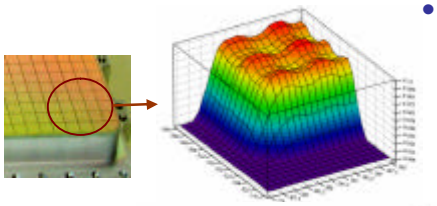


- Photocurrent scan over the whole PC area
- Gives relative photocurrent from integral illumination

Performances:

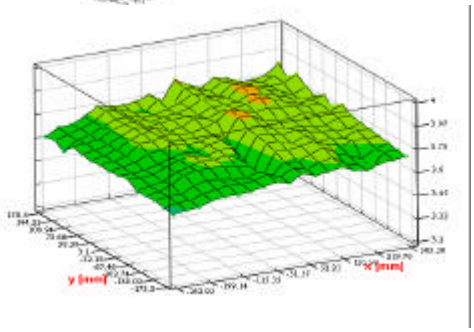
- High QE obtained from RD26 output
- ~ 20 photoelectrons (per cm of radiator) currently detected in a single event





- High sensitivity of VUV scanner monitoring

- Uniform response over large area



Final series production (50 PCs) started May 2004 with a production rate of 1 PC/week