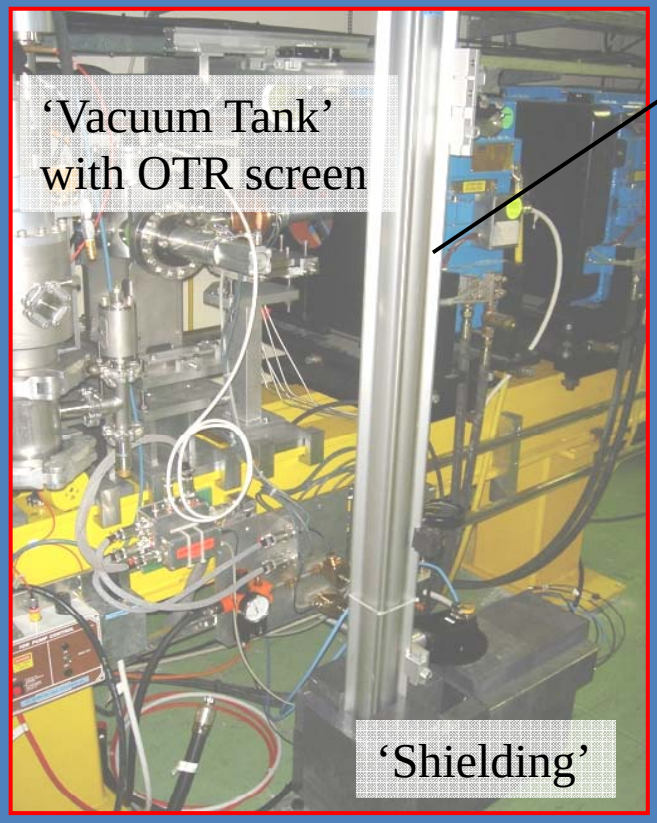
Profile monitors @ CTF3

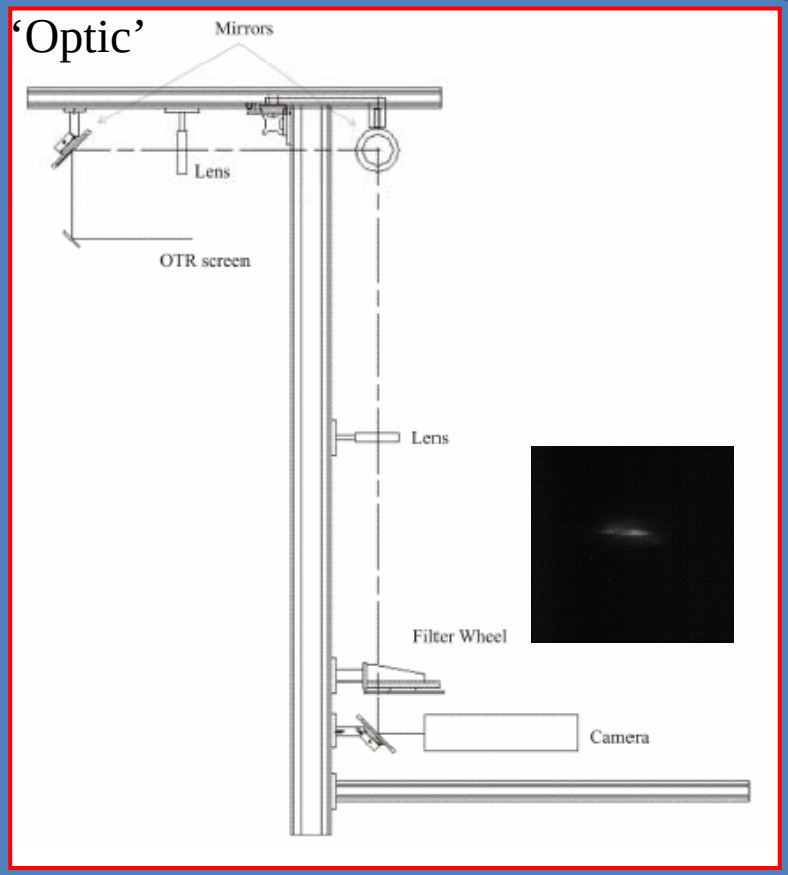
T. Lefevre AB/BI/PM

- Overview of profile monitors @ CTF3
- Beam Halo studies
- New design of MTV system for CLEX
- Plans for 2008

Profile monitors @ CTF3

In 2007, there was 6 MTV's for emittance measurements and 4 MTV's for spectrometry





BINER

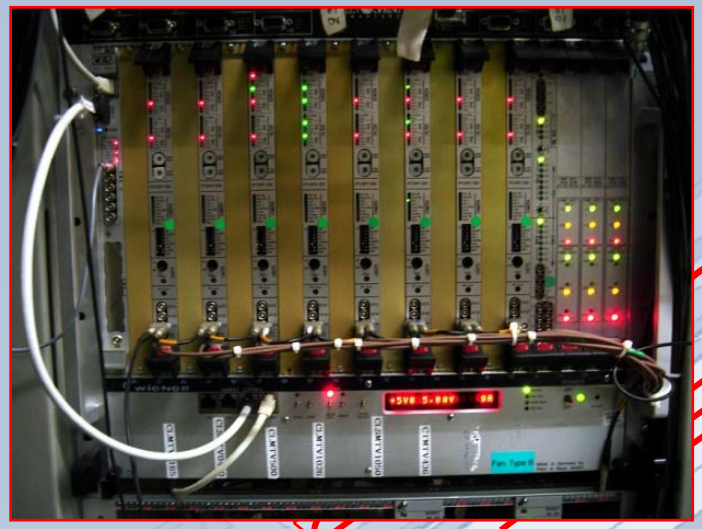
Profile monitors @ CTF3

In 2007, there was 7 MTV's observing Synchrotron light in the rings and in the chicane

Simplified optical system with an optical density filter wheel and a camera equipped with a 300mm zoom lens

Profile monitors @ CTF3

In 2007, there was 16 MTV's controlled by CERN made VME cards (8cards / VME Crate

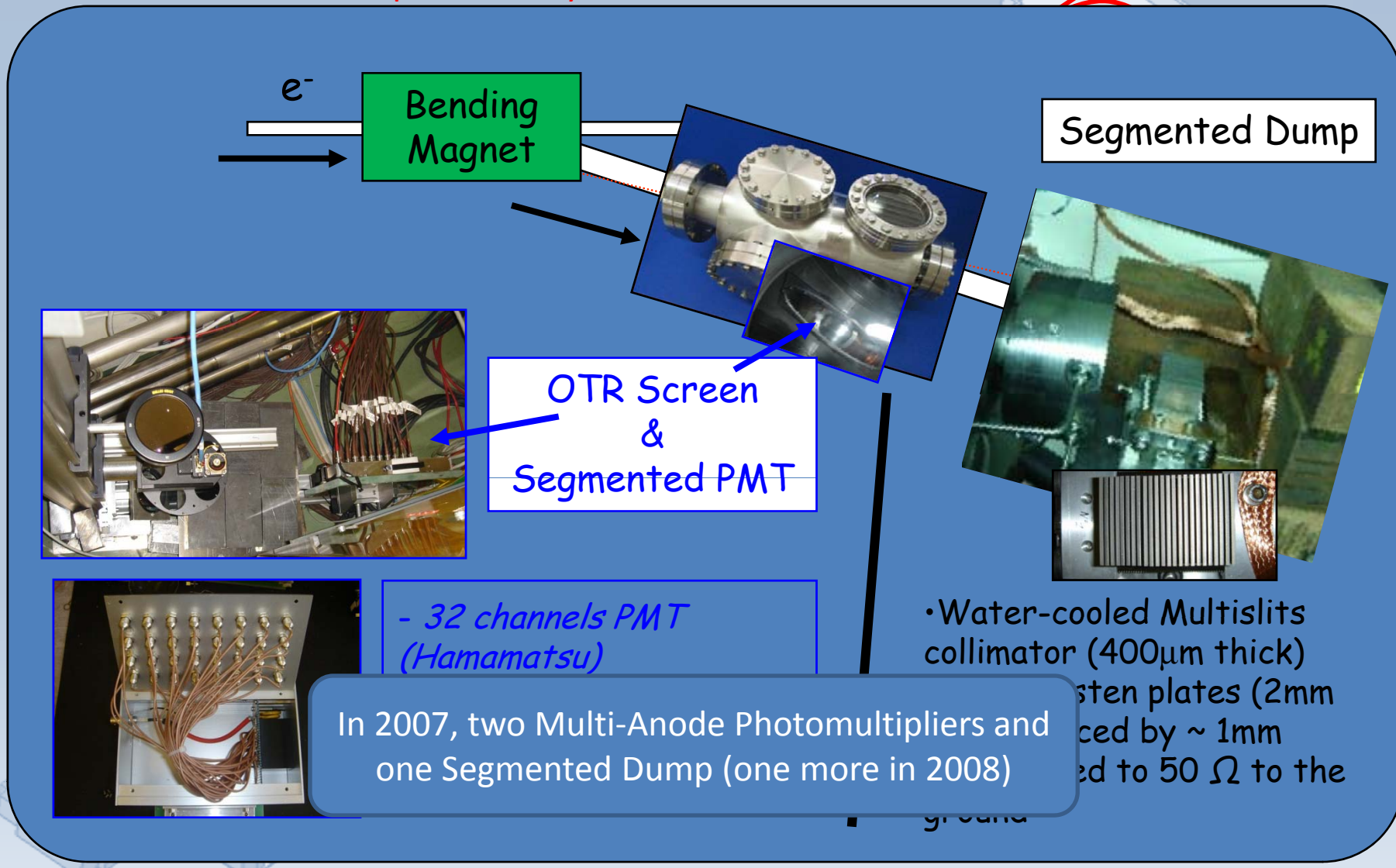


Gallery 2001

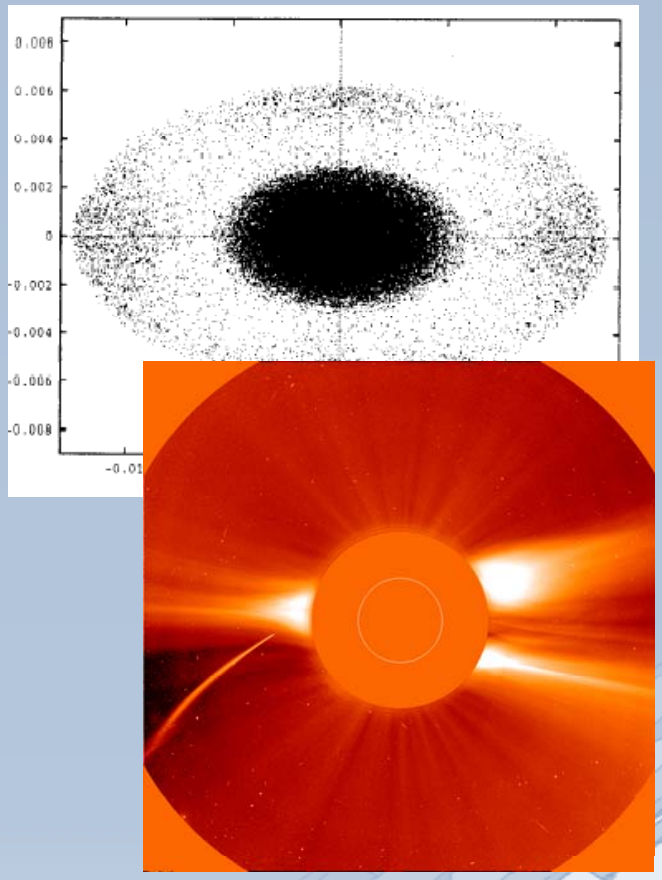
Building 2002

Profile monitors @ CTF3

Time Resolved Spectrometry



Beam Halo Studies



- 2004: Test of high dynamic range beam imaging system using a core masking technic with a fixed mask. (achieved 10^4 DR)

  EPAC 2004 ; CERN-AB-2004-091

- 2005-06 Test of several high dynamic range systems like SpectraCAM CID camera

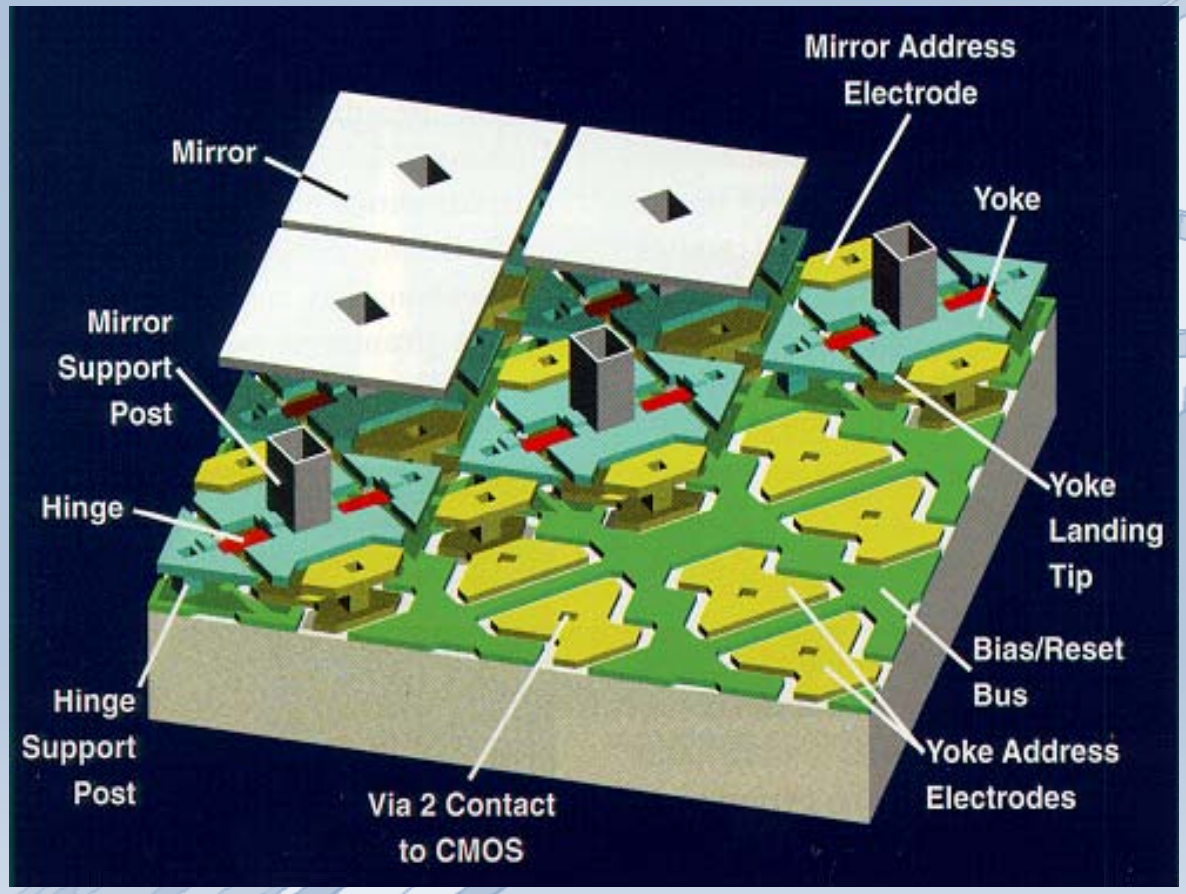
  Meas. Sci. Technol. **17** (2006) 2035–2040

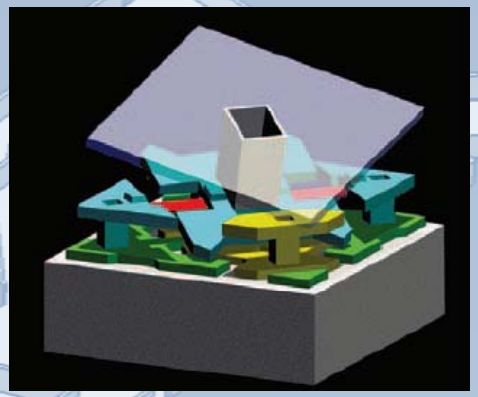
- 2007 – Back to a core suppression technique using adaptive optics – DLP technology

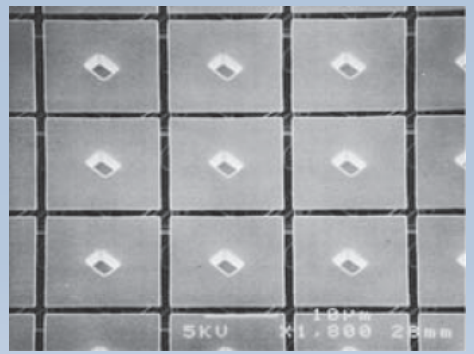
  Laser conference 2007,

Beam Halo Studies

Micro Mirror Array

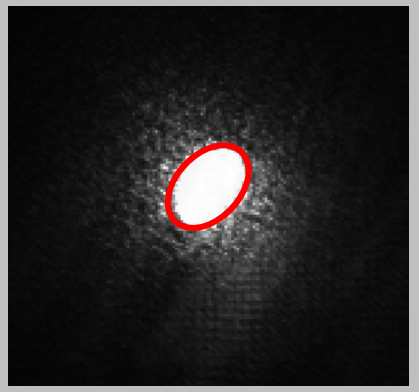




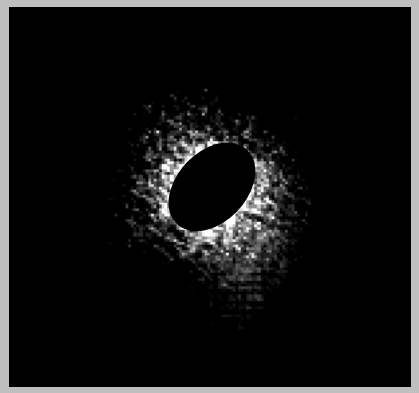


Beam Halo Studies

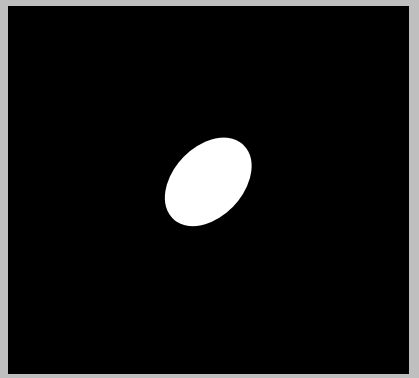
(1) Aquire profile



(2) Define core

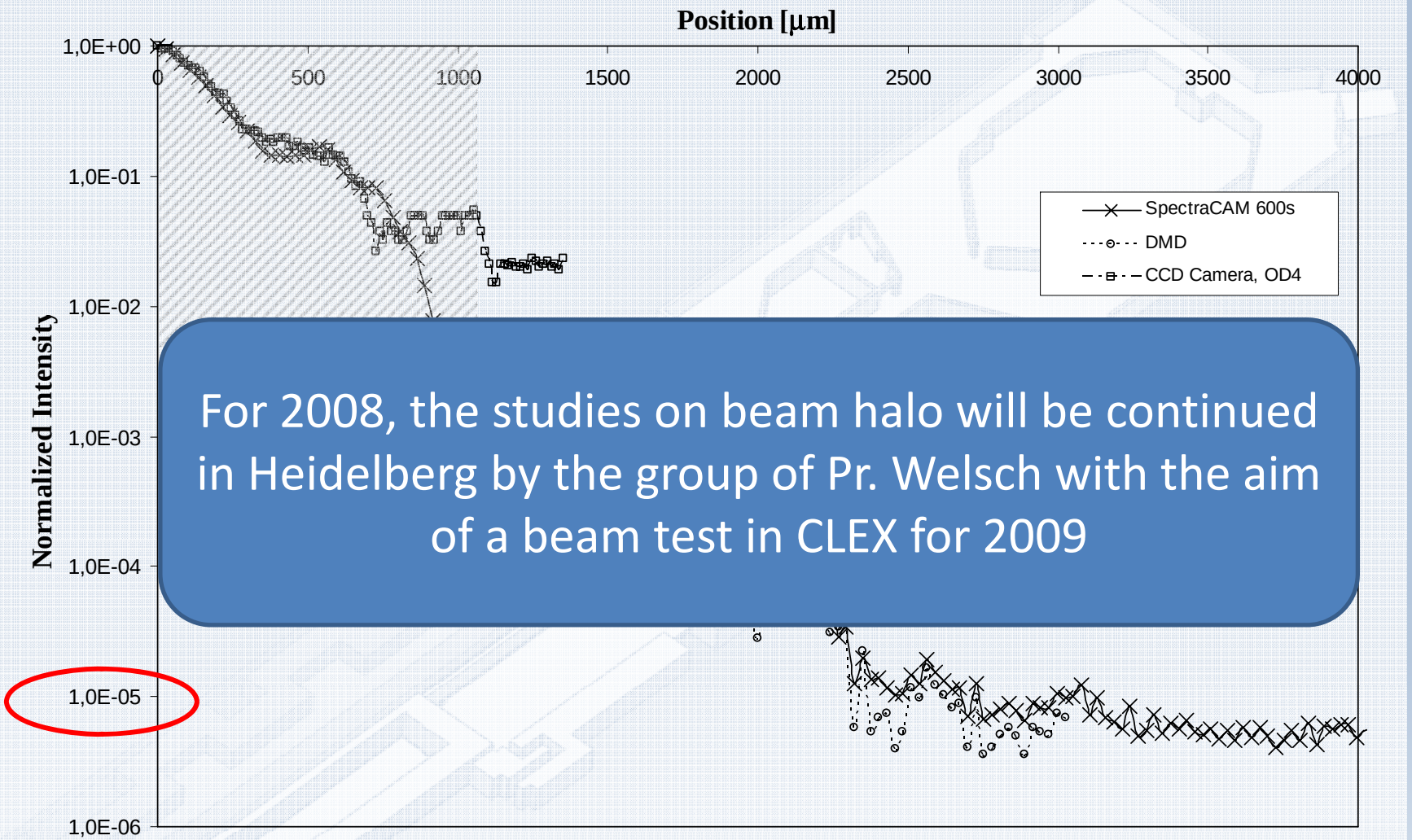


(4) Re-Measure



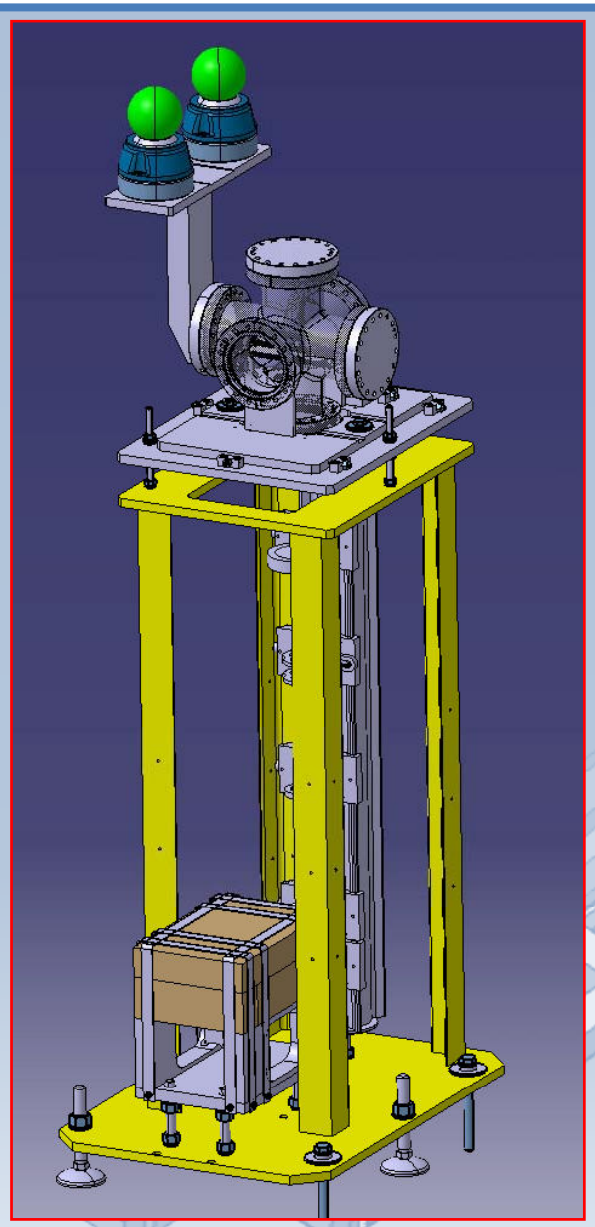
(3) Generate mask

Beam Halo Studies



For 2008, the studies on beam halo will be continued in Heidelberg by the group of Pr. Welsch with the aim of a beam test in CLEX for 2009

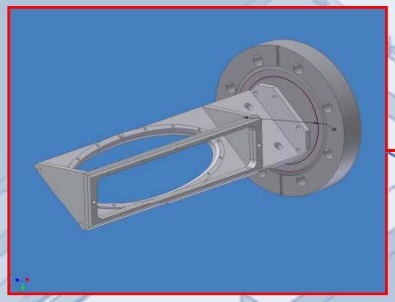
New Design of MTV



OTR screen for spectrometer line

120x50mm Wide screen – 200µm spatial resolution

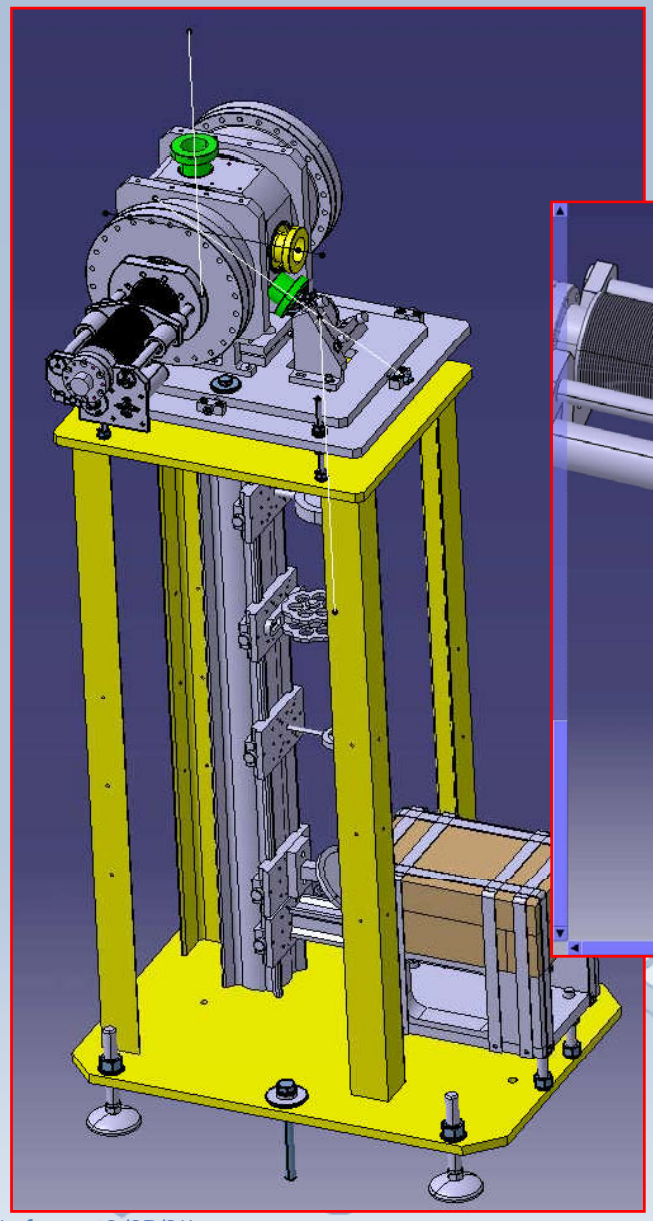
Compact and Cheaper design



Implement a carbon foil to suppress the SR light emitted in the bend

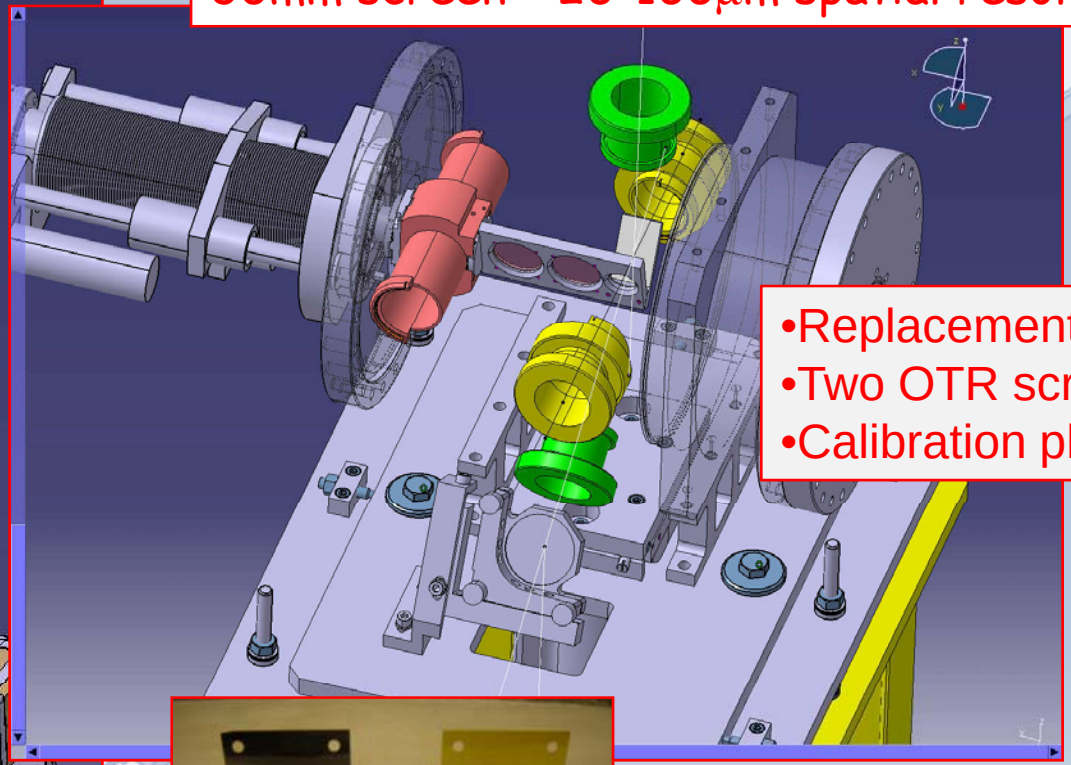
Parabolic OTR screen for better optical performances

New Design of MTV

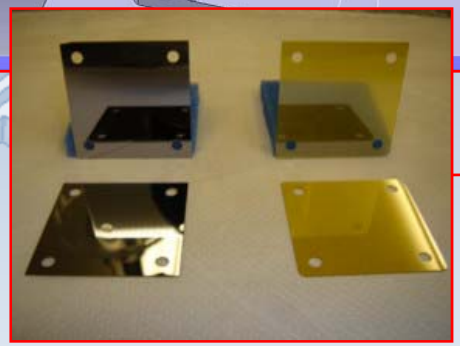


OTR screen for emittance measurement

30mm screen – 20-100µm spatial resolution

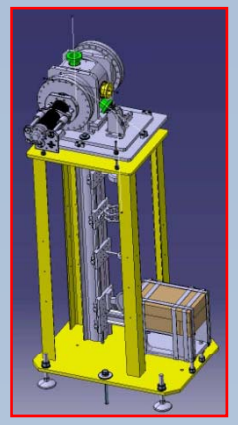


- Replacement chamber
- Two OTR screens
- Calibration plate

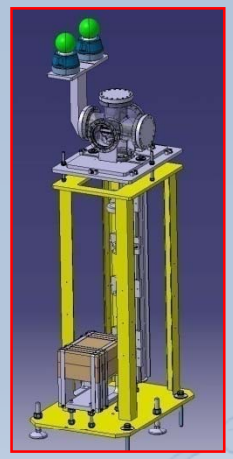


200µm thick mirror polished Si and CVD SiC wafer

New Design of MTV



X 1



X 3

X 2 for Transfer Line 2

UPPSALA UNIVERSITET

X 2 for the Two-Beam Test Stand

Foreseen Activities in 2008

- Install 2 MTV's (pepper-pot & spectrometer line) for the Photo-injector test stand (see Steffen talk on Wednesday)
- Install 7 new MTV's in CLEX (3 for Califes, 2 TL2, 2 TBTS)
- Prepare a new streak camera laboratory for CLEX
- Design the instruments for emittance and energy measurements in the Test Beam Line (FP7 Ph. D starting in 2008) : more details by Erik Adli on Tuesday afternoon

Thanks to…

Cathelijne Bal, Enrico Bravin, Stephane Burger, Nicolas Chritin, Christian Dutriat, Bruno Favrat, Delphine Gerard, Morad Hamani, Philippe Lavanchy, Thibaut Lefèvre, Romain Ruffieux, Erminio Rugo, Carsten Welsch, **Cathelijne Bal,** Enrico Bravin, Stephane Burger, Nicolas Chritin, Christian Dutriat, Bruno Favrat, Delphine Gerard, Morad Hamani, Philippe Lavanchy, Thibaut Lefèvre, Romain Ruffieux, Erminio Rugo, Carsten Welsch, Cathelijne Bal, Enrico Bravin, Stephane Burger, Nicolas Chritin, Christian Dutriat, Bruno Favrat, Delphine Gerard, Morad Hamani, Philippe Lavanchy, Thibaut Lefèvre, **Romain Ruffieux**, Erminio Rugo, Carsten Welsch, Cathelijne Bal, Enrico Bravin, Stephane Burger, Nicolas Chritin, Christian Dutriat, Bruno Favrat, Delphine Gerard, Morad Hamani, Philippe Lavanchy, Thibaut Lefèvre, Romain Ruffieux, Erminio Rugo, Carsten Welsch, Cathelijne Bal, **Enrico Bravin**, Stephane Burger, Nicolas Chritin, Christian Dutriat, Bruno Favrat, Delphine Gerard, Morad Hamani, Philippe 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Profile monitors @ CTF3

Rad-hard camera installed

CTF3 Note 077

- CCD destroyed within weeks
- Lens darkening

  Fused silica lenses.
- Damage to valves, cables and connectors