EMIT4D

Development of an innovative diagnostic: high intensity 4D emittance meter

The beam meets a pepper pot which select beamlets by calibrate micro holes

The selected beamlets interact with the scintillator and produce light...

...collect by a camera.

After the image collection, they are proceed to compute the XX'YY' emittance and its 6 high resolution projections.

The system is moved by an XY microstep motorization to select other beamlets and multiply the number of measures.

Beam specifications:
- Protons
- Øbeam = 20 to 100mm
- Maximum permissible power absorbed = 1 kW average
- Imax = 100 mA
- Angular acceptance = 0 to 100 mrad
- Energy = 100 keV to 3 MeV

Cu-W cooled pepper pot - 121 holes

Scintillator F46 Y3AlO5;Ce3+
Sensitivity 2 µA

PoE camera
4 MPixels
29*29*60,5 mm
+ lens 25 mm

Micro step motorization
step 50 µm
X: stroke 10 mm
Y: stroke 10 mm (+180)

Stainless steal cooling tank

Cu2-OFHC

NiCu

W95%

Cu

x(mm) y(mm) x'(mrad) y'(mrad)

Pepper pot system without motorization
2D system with motorization
Pepper pot system with motorization: EMIT4D