Emittance Measurement Instrument
for a High Brilliance H⁻ Ion Beam

Non-Destructive, Photo Detachment Emittance Measurements at the Front End Test Stand FETS at 3MeV

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The Front End Test Stand Collaboration
Photo Detachment Emittance Measurement

Implemented Method: $yy'$ in combination with movable particle detector

H$^-$-beam, Neutral atoms produced in the transport section

Neutral atoms produced in the transport section

Magnet pole tips

Laser, $\lambda = 1060$ nm

Displacement & Spread of neutralized particles
- Angle profile $I(y')$
- 2D Beam distributions along the neutrals drift

Non—destructive
Preferable for high power
On line measurements

LINAC 2008 (Victoria), TUP084

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Reconstructed Emittance using Maximum Entropy MEM

During the poster session I would like to discuss with you ..........

(A) 3 profiles
(B) 4 profiles
(C) 8 profiles
(D) Entrance emittance

→ Reasonable results
→ Phase advance

☐ First used in image reconstruction like e.g. astronomy
☐ Bayesian statistics
☐ Noisy data
☐ Incomplete data
☐ limited No. of profiles

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