First Measurements With a Rotatable Vacuum Chamber
Rotatable Vacuum Chamber

- Rotation angle of 270°
- 4 CF100 ports
- Camera with 1600 x 1200 @14 bit
- Anti-Reflexion coating
- Pressure down to 3*10^{-8} mbar
- Non Invasive
- Online diagnosis

Rotatable chamber

Volume
Type
Ion Source
150 kV
Terminal

W_{e} = 120 \text{ keV}
P_{e} = 24 \text{ kW}

Diagnostics
chambers

Chopper
f_{\text{rep}} = 250 \text{ kHz}
\Delta t = 50-100 \text{ ns}

Rebuncher

Multiaperture
Rebuncher

\text{Li Target for}
Compressor
Mode

\text{Li Target for}
Activation
Mode

\text{V}
\text{ol}
\text{um}

f = 5 \text{ MHz}

\text{Rebuncher}

\text{Bunch}
Compressor

\text{Kicker}

W_{e} = 700 \text{ keV}
P_{e} = 3.5 \text{ kW}

W_{e} = 2.0 \pm 0.2 \text{ MeV}
P_{e} = 10 \text{ kW}

W_{b} = 700 \text{ keV}
P_{b} = 3.5 \text{ kW}

W_{b} = 2.0 \pm 0.2 \text{ MeV}
P_{b} = 10 \text{ kW}

W_{b} = 120 \text{ keV}
P_{b} = 24 \text{ kW}

W_{b} = 2.0 \pm 0.2 \text{ MeV}
P_{b} = 10 \text{ kW}

\text{Non Invasive}

\text{Online diagnosis}

\text{Rotatable chamber}
First Wire Measurements

Radon-Plot

Positioning Accuracy

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Wire Reconstruction

Wire reconstruction

Maxima Position
Camera Offset

No shift

Shift

0°

180°
Axis and Angle Deviation
Correction Methods

Adjustment errors

- Linear correction of axis offset
- Correction vector through image overlay

Measurement errors

- Secure optics and camera
- Fixed-point measurement

Centre of gravity correction as first approach

No rotation correction, proximity loss
• Original thickness: 0.1 mm
• Measured: (0.133 ± 0.044) mm
Light stick Measurement

Recorded

Normalised

Original: 5.3mm  <->  Reconstructed: 5.11mm

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Next Experiment

Faraday cup  Rotatable chamber  Slit-Grid Emi.  Solenoid

Ion source
Outlook

- Develop proximity preserving and reliable correction method
- Secure optics and fine tune positioning
- Test chamber with ion beam
- Comparison of tomographic and conventional beam data
Thank You for your Attention