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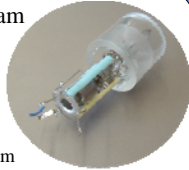
Setup

Ion source



- 500-5000 V
- 0.5-10 mA ions
- 0.5-10 μ A protons

e⁻ beam

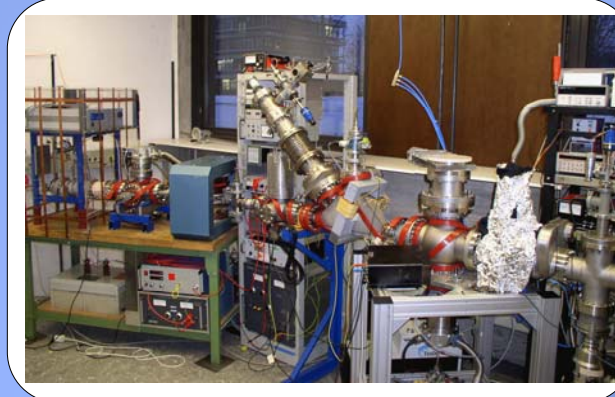


- beam of 30 keV electrons parallel to proton beam

Two irises



- beam collimation, background reduction of electrons

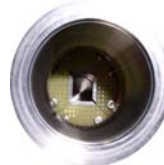


High voltage cage

- accelerating up to 30 kV

30° Separation magnet

Four-sector aperture



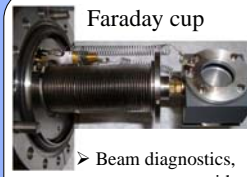
- beam definition, positioning

Einzel lens



- 0-35 kV for defocusing the beam

Faraday cup



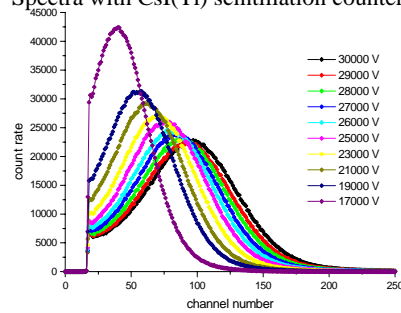
- Beam diagnostics, current measurement with electrometer : mA - pA

Detector position

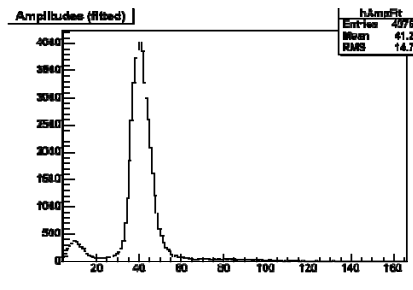
- CsI (Tl) scintillation detector
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- Si strip detector
- MCP detector

Results

Spectra with CsI(Tl) scintillation counter



Spectra with Si strip detector



30 keV protons

Applications

PENELOPE

Precise Experiment to measure the **N**eutron Lifetime Operating with **P**roton **E**xtraction

CsI detector



- test of efficiency at 10 K
- test for a large-area detector

BoB

Neutron decay to bound proton electron state **bound beta = „BoB“**

CsI(Tl) Scintillation detector



- count rate down to single proton events

aSPECT

Precision measurement of the electron antineutrino correlation coefficient **a**

Si strip detector



- variable angle between beam & detector