Possible contribution of CENTA laboratory to CREDO collaboration

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• Visegrad Fund

CREDO Meeting, Bratislava, 19.3.2018

CENTA – CEnter for Nuclear Technologies and Accelerators

- state of the art laboratory for
- Ion Beam Analysis (IBA)
- Accelerator Mass Spectrometry (AMS)
- Low-energy Nuclear Physics
- wide applications in nuclear, environmental and material physics

Current state of the laboratory



lon sources



Alphatross

MC-SNICS

lon sources

Alphatros - ions production from gaseous samples

- H, ²H, ³He, ⁴He, ¹⁶O, ¹⁴N etc.



MC SNICS (Multi-Cathode Source of Negative Ions by Caesium Sputtering)



Low energy (keV) separation



Accelerator



Accelerator

- Two steps of acceleration tandem
- Total energy of accelerated ion





High-energy (MeV) separation



PIXE/PIGE Chamber



PIXE/PIGE Chamber

- Used for irradiation of samples under high vacuum (10⁻⁷ Torr) – PIXE (Particle Induced X-ray Emission) and PIGE (Particle Induced Gamma-ray Emission)
- Sample holder with 4 positions for thin and thick samples (max. dimensions 3 cm x 4 cm of samples)
- Inner CCD camera for precise sample position
- BEGe detector from Canberra operates from 3 keV to 3 MeV

Discussion

- CENTA laboratory production of different ion beams (H⁺ up to 6 MeV, He⁺² up to 9 MeV, etc.)
- Ion beam intensities from pA to μA (depends on ion and energy) – continuous beam
- Testing CCD (phone like) response to charged particles
- How will electronics work in high vacuum?