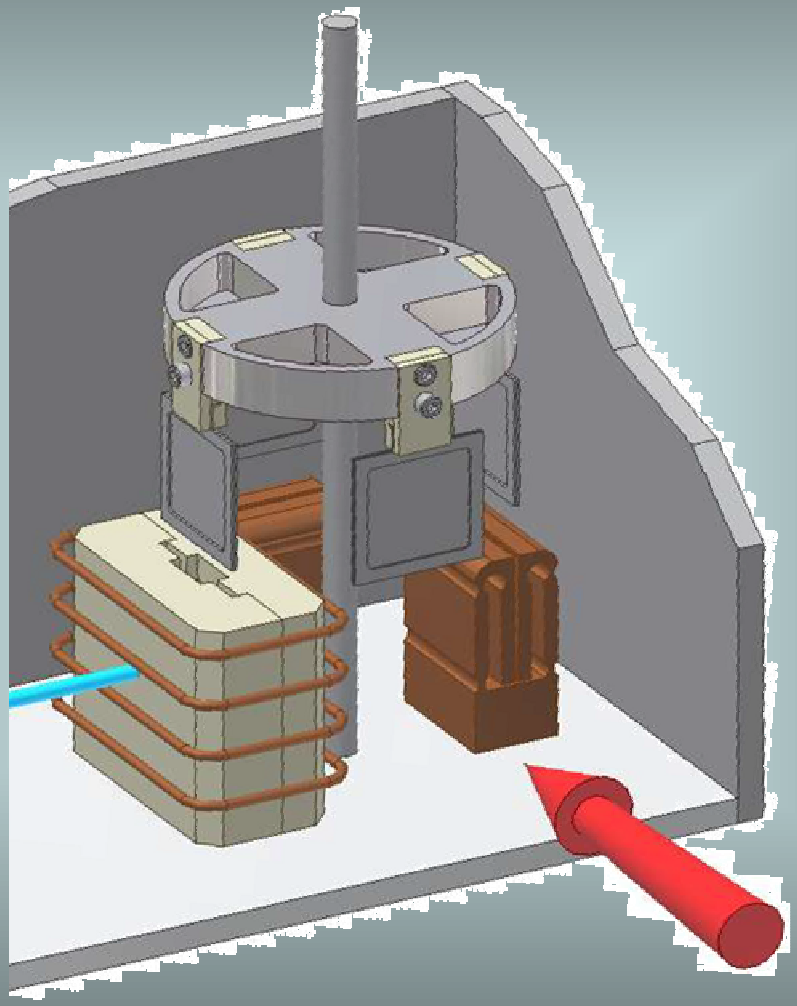
Online Isothermal Vacuum Chromatography

CRATE



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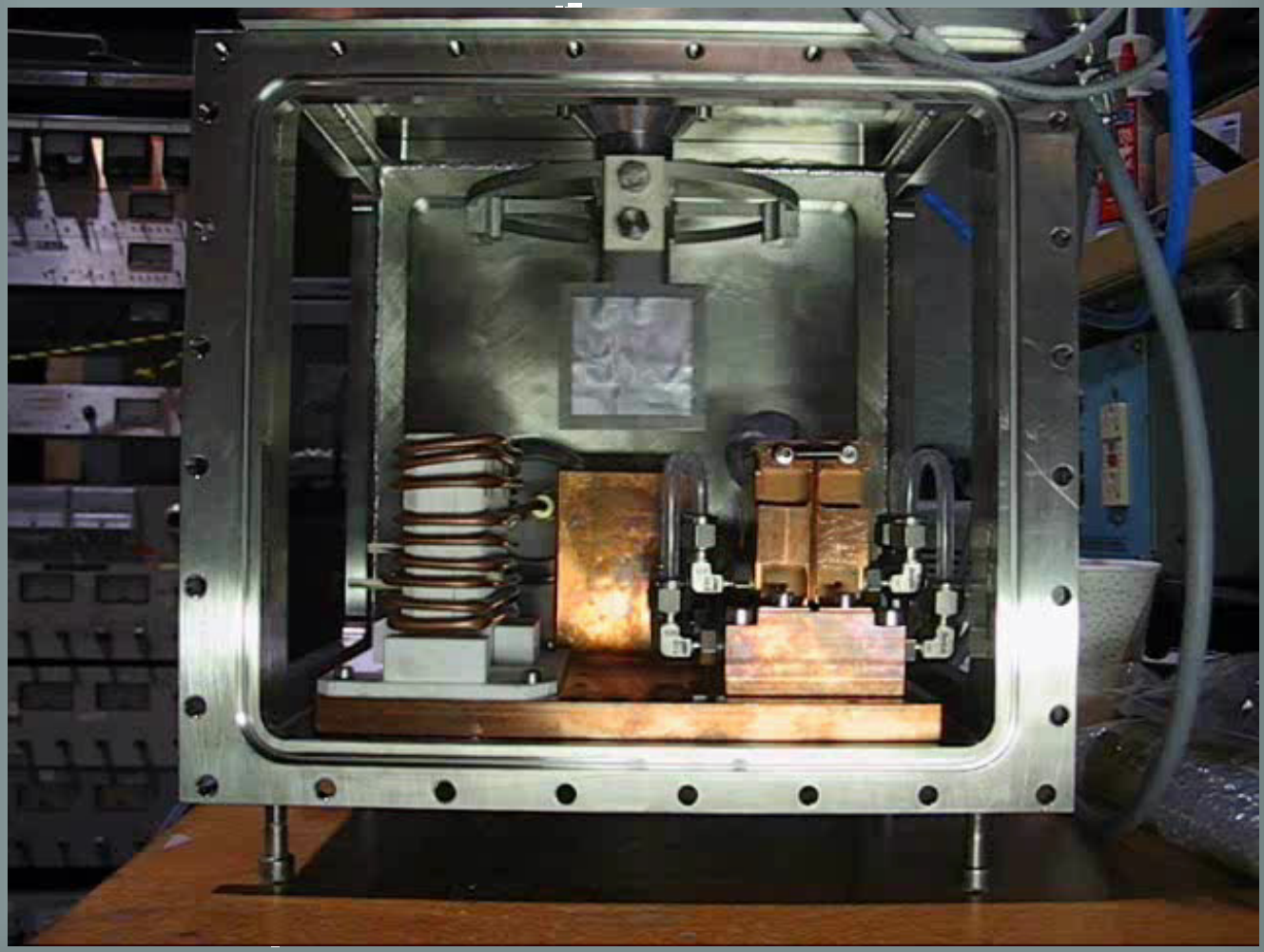
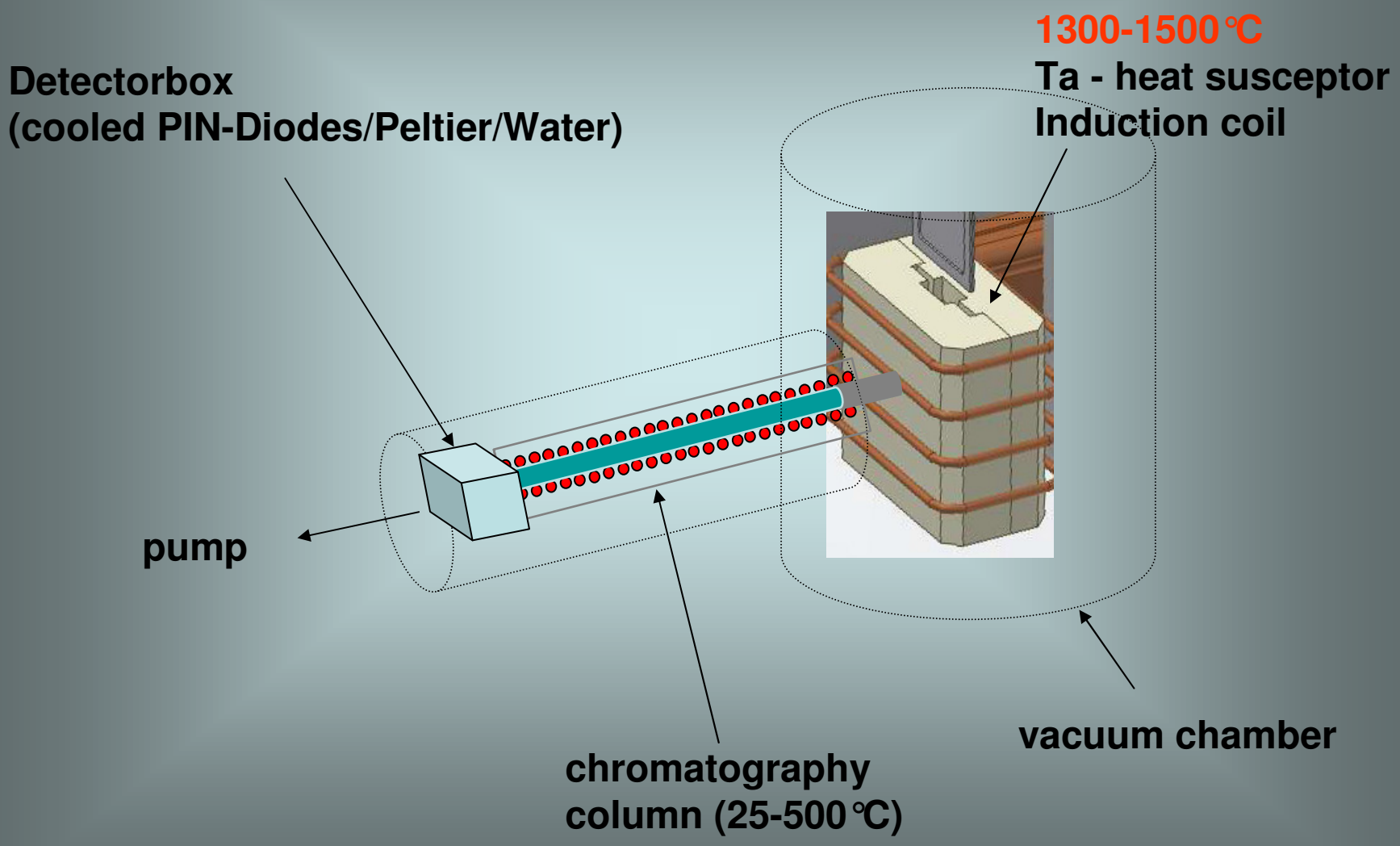
CRATE

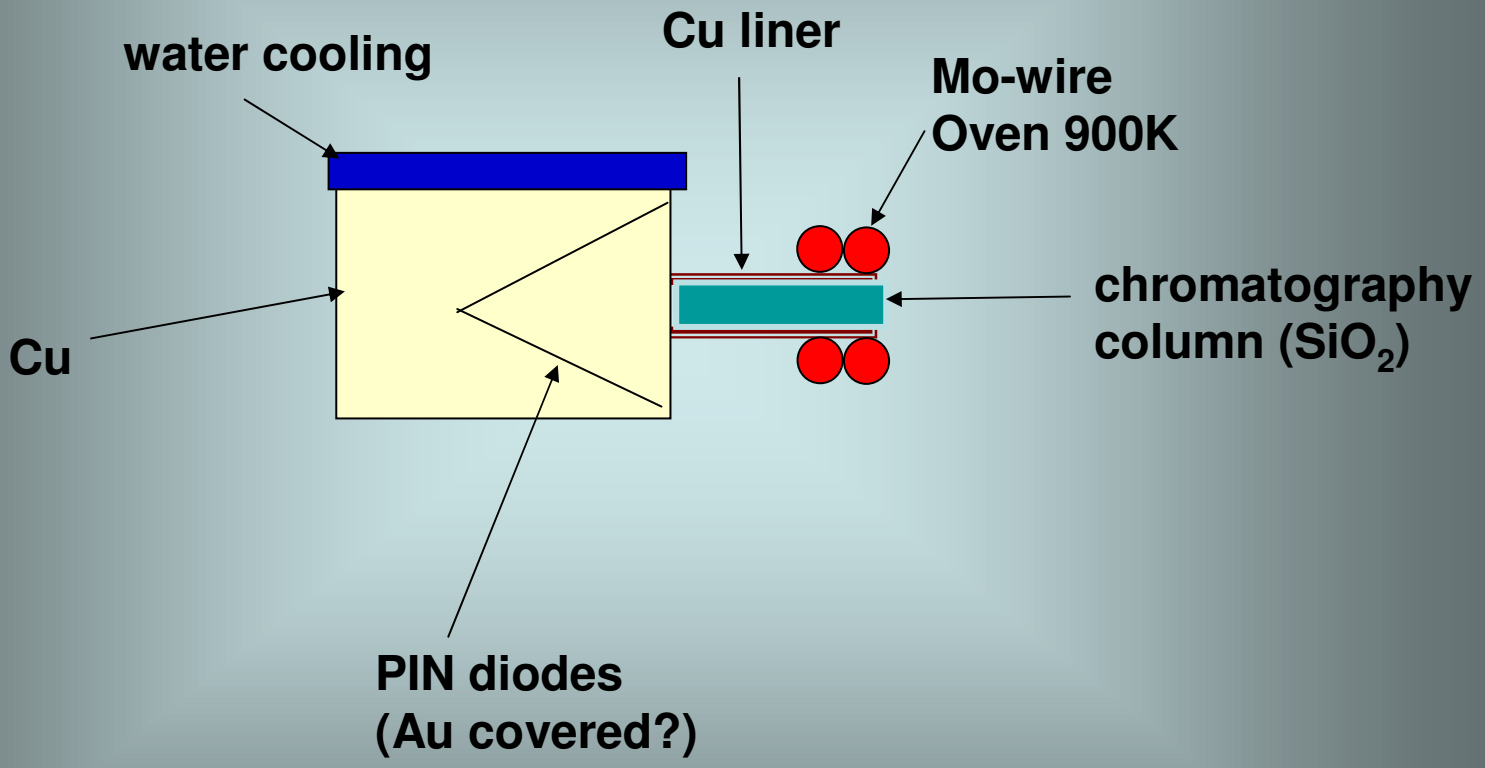


Online Isothermal Vacuum Chromatography

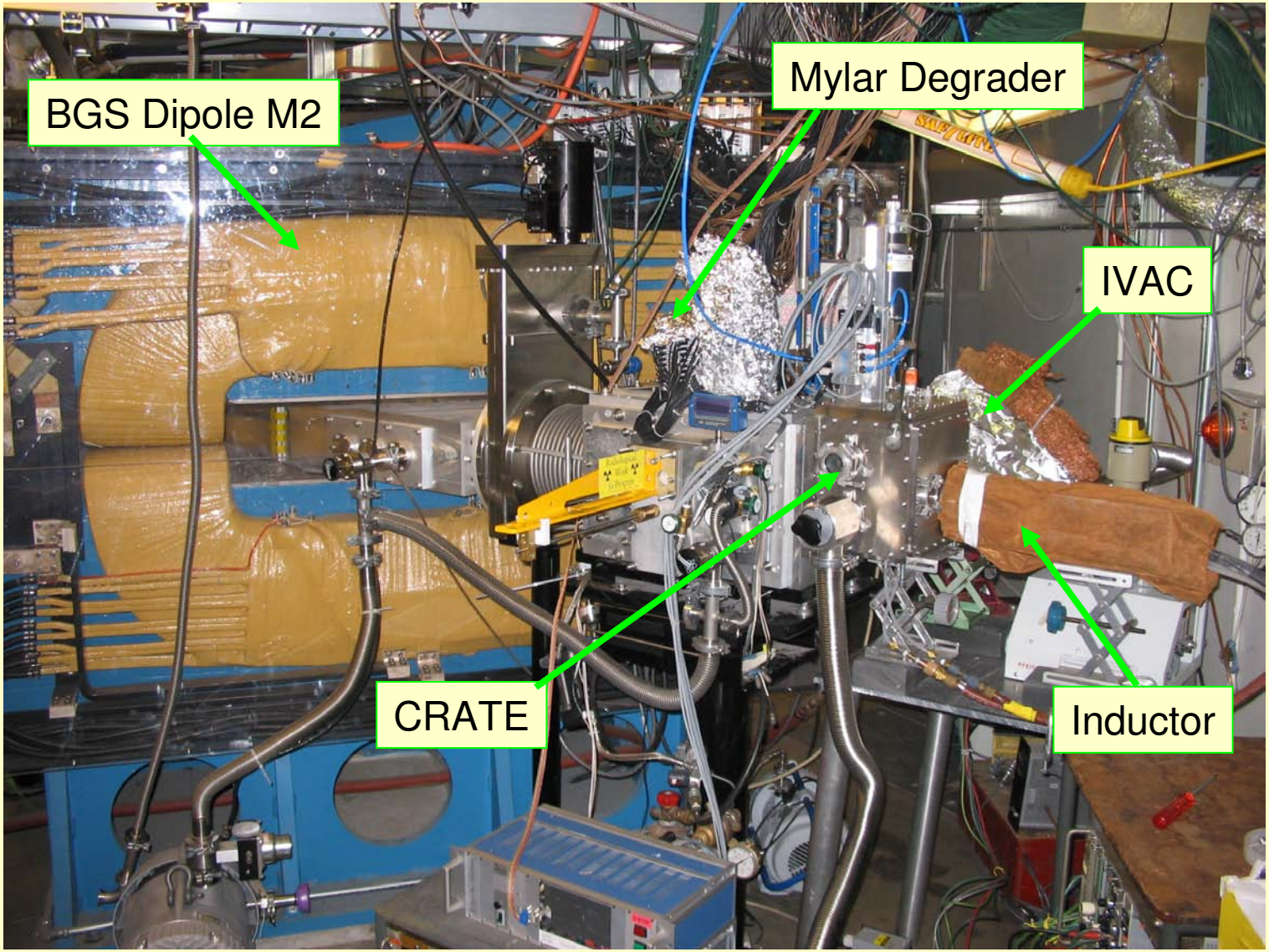


Online Isothermal Vacuum Chromatography

Detector box scheme



Online Isothermal Vacuum Chromatography
CRATE @ BGS



3. Conclusions
CRATE-IVAC @ TASCA

1. Things to check regarding release kinetics:
   - A Higher temperatures
   - B Thin foil stacks
   - C Other materials (Sascha Yakushev: Tin?)
   - D Little redesign of heating position
   - E Light-tight (IR-Vis) PIPS detector coverage for operation in vicinity of up to 650℃
2. Are primary (metal) aerosol gas-jets to couple CRATE to TASCA?
   - A short transport range
   - B impaction on sampling foil of CRATE
   - C release=desorption → fast at lower temperatures

3. More model experiments

New PhD Student Alexey Serov (Moscow) starts November 1 2006!

Bragg Peak Spectroscopy

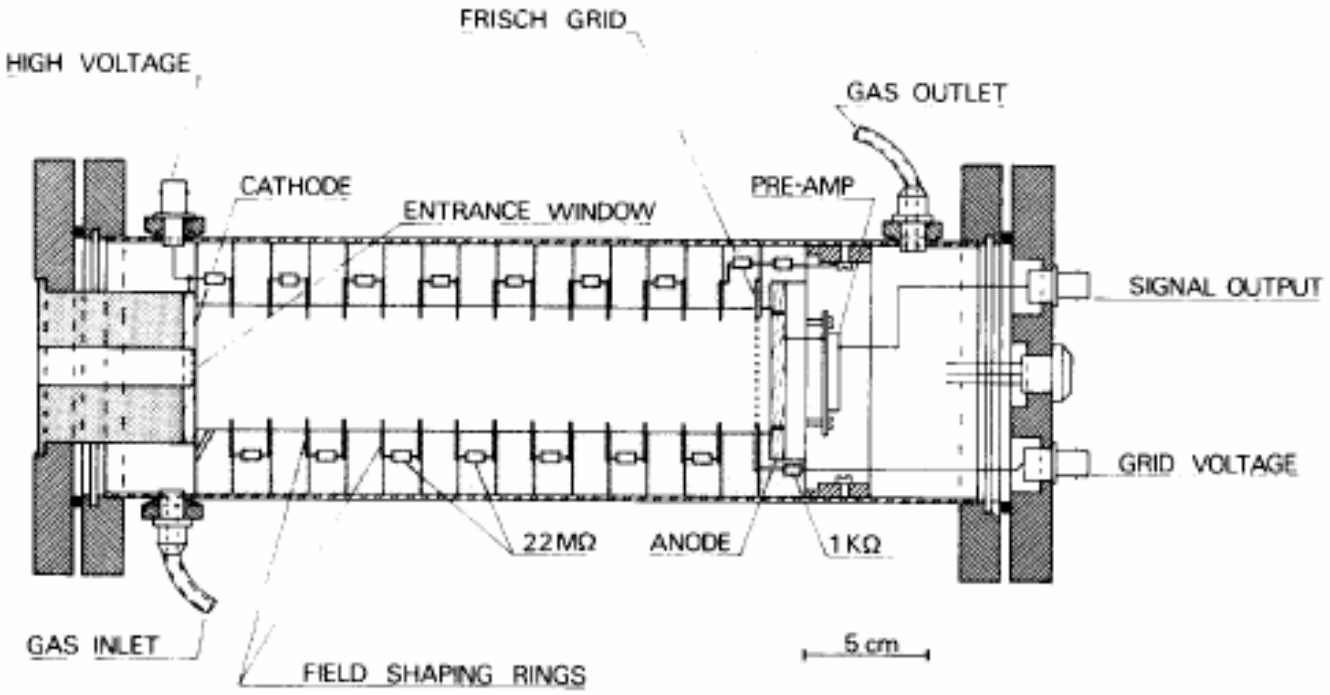
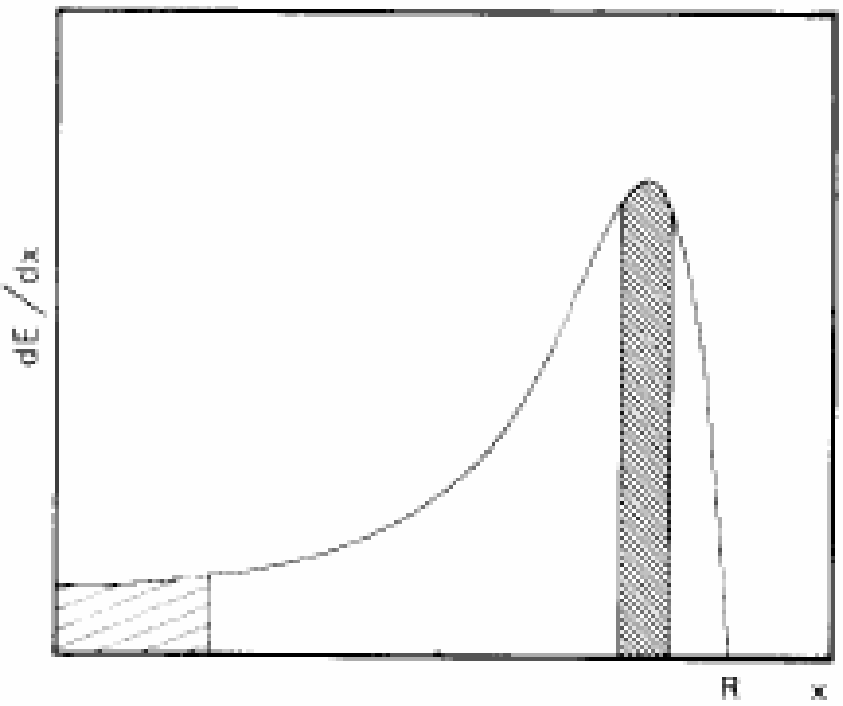


Fig. 3. Detector design.

Bragg Peak Spectroscopy



R : HEAVY ION RANGE (A, Z, β)

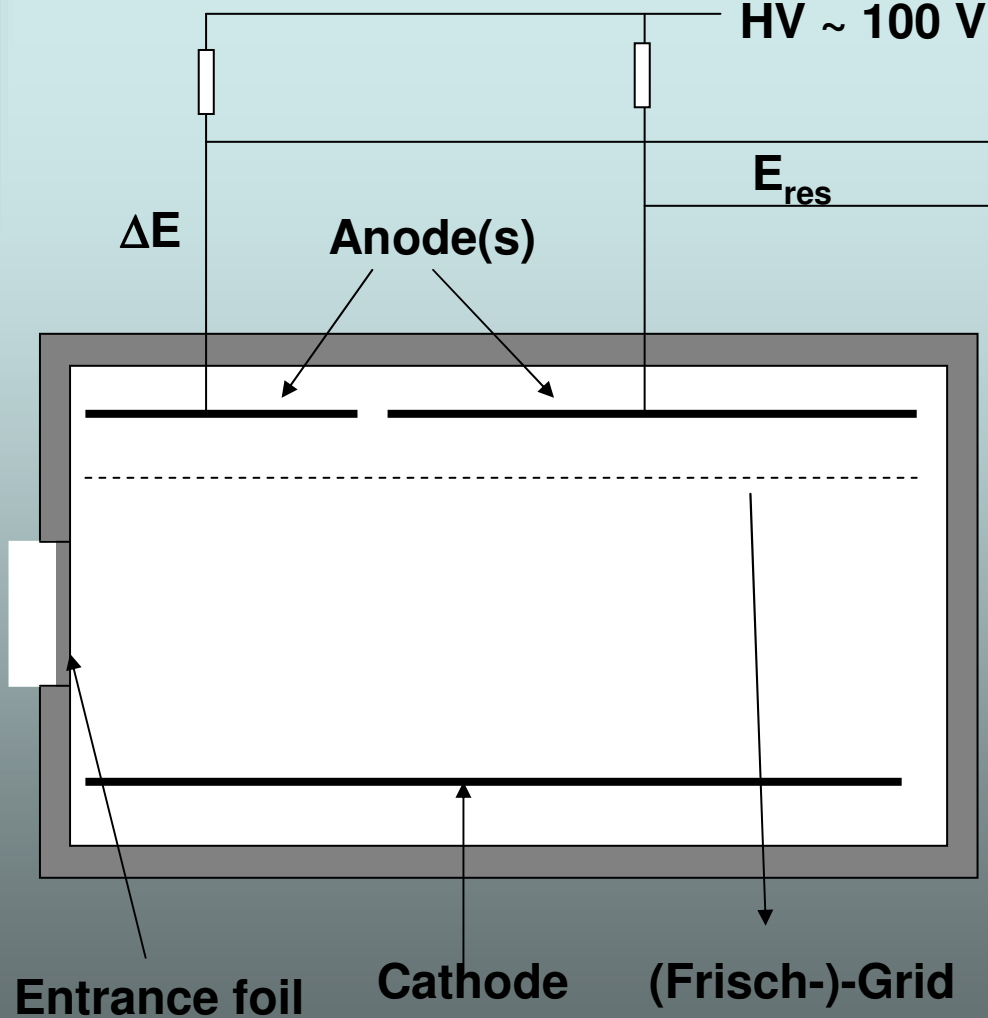
BRAGG PEAK AMPLITUDE (Z)

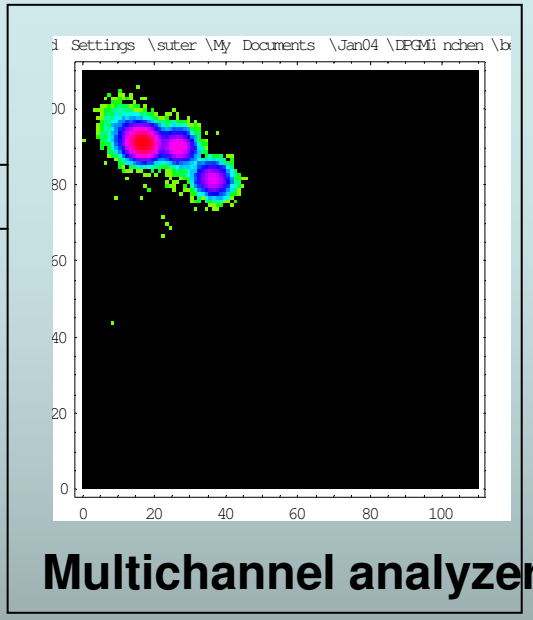
SPECIFIC IONIZATION (Z, β)

E : INTEGRAL OVER THE CURVE

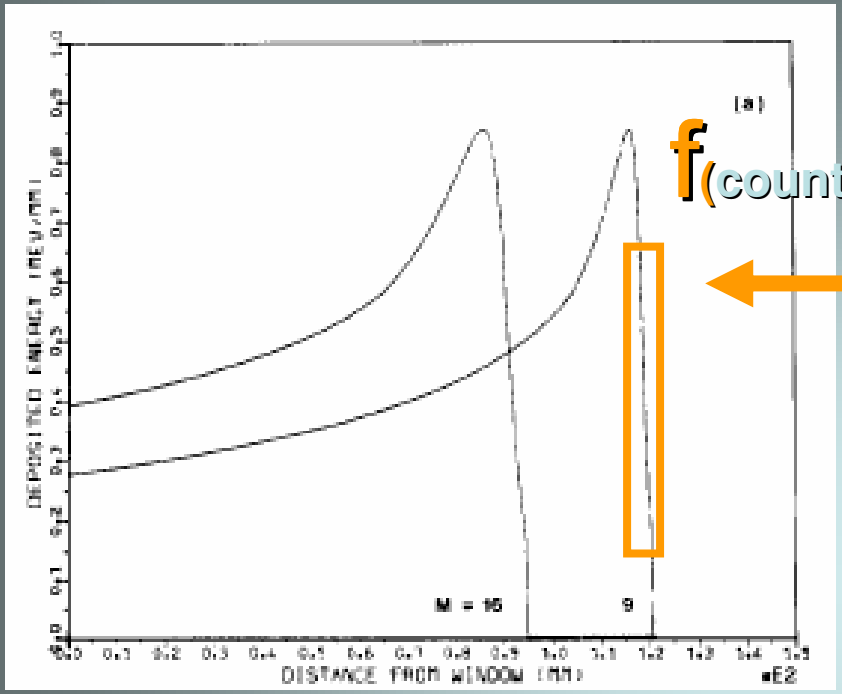
Fig. 1. Principle of Bragg curve spectroscopy.

Principle of an Ionization Chamber used in AMS





Bragg curve



f(counting gas, p)

Signal

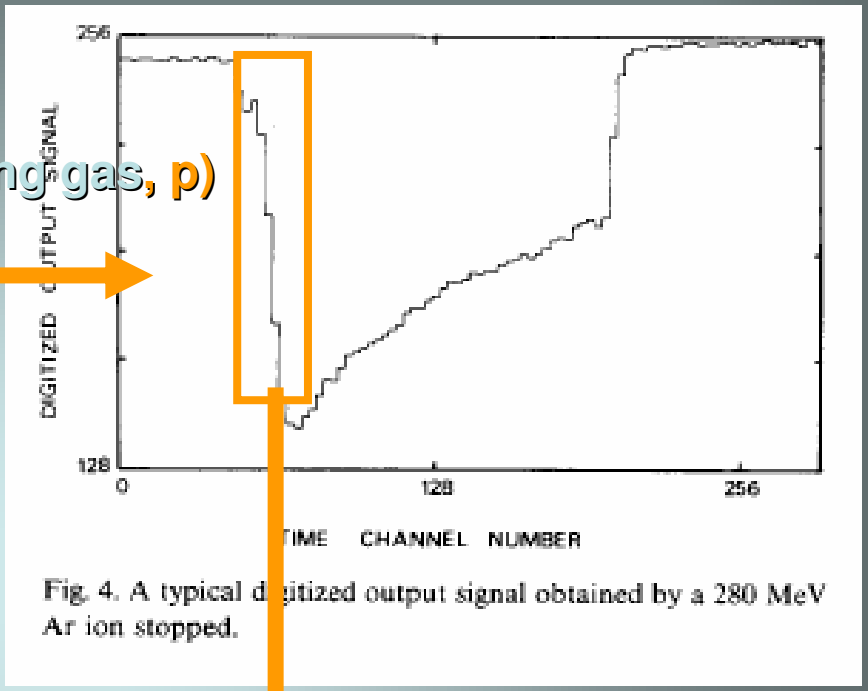


Fig. 4. A typical digitized output signal obtained by a 280 MeV Ar ion stopped.

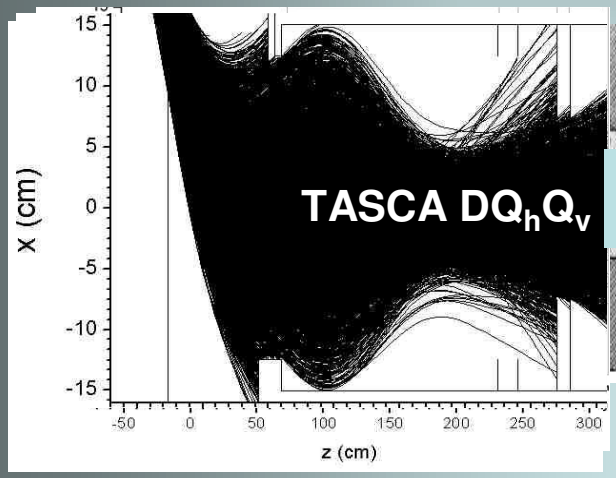
Task:
- **Model experiments @ ETH**
- **Modeling of Ion stopping and electron generation and sampling in BIC detector as function of stopping gas composition and Z**
- **Built-up of a BIC**
- **Model experiments at TASCA, ILL, ETH**

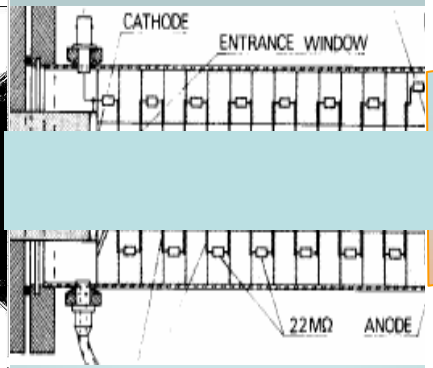
Z identification??

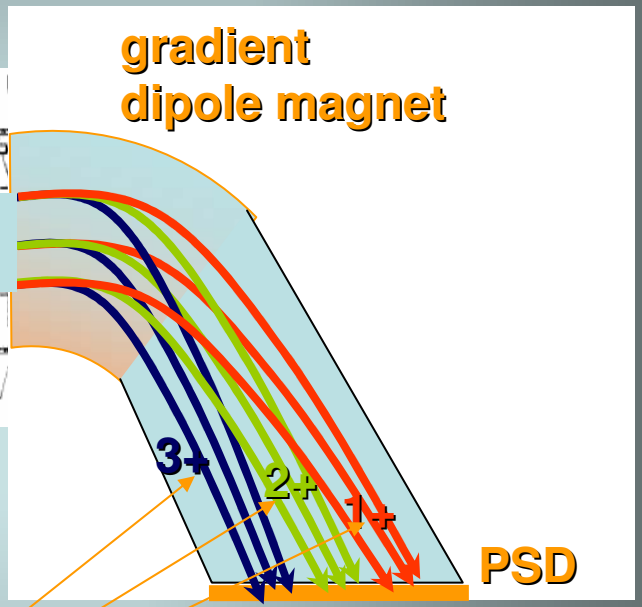
PhD Thesis of Lidija Josic
In collaboration with
M. Suter's AMS group
ETH Hönggerberg!

The naive vision

Z identification via dE/dx??







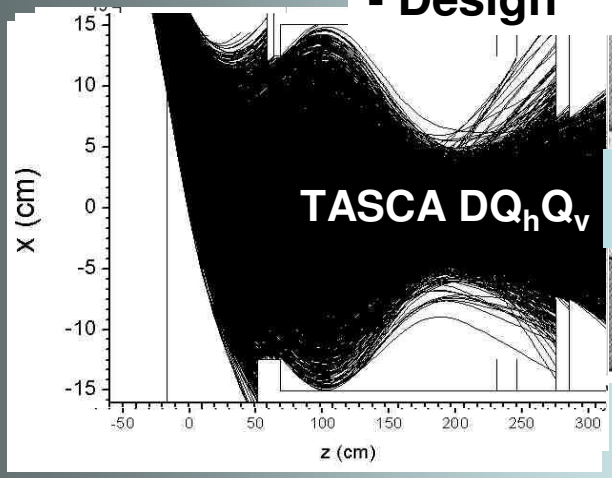
A. Semchenkov TASCA transmission simulation 2005

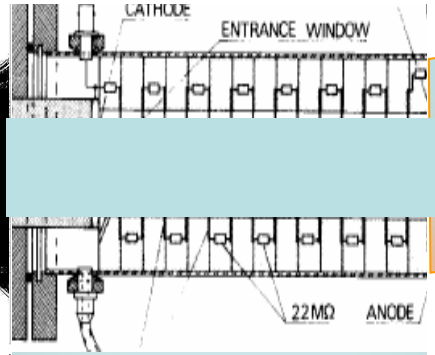
event-by-event
α-SF spectroscopy
(implantation signal?)

Charge states at low Ion velocities
from position in PSD?

$f_{(\text{counting gas, p})}$

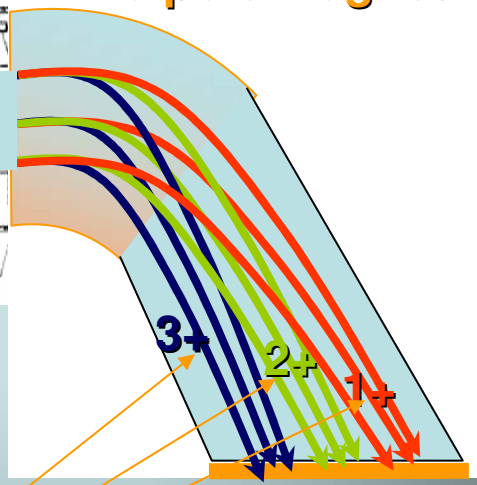
2 Task:
- **Modeling of possible systems i.e.:**
  - **ion charge, stopping**
    stopping gas composition
- **Gas filled gradient focusing magnet**
- **Transmission estimations**
- **Design**





A. Semchenkov TASCA transmission simulation 2005

lient
dipole magnet



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