



Transnational acces within the ChETEC project

University of Cologne

Andreas Zilges / Felix Heim

Departement of Physics

... in future

Built in 2014

Under construction



Institute for Nuclear Physics

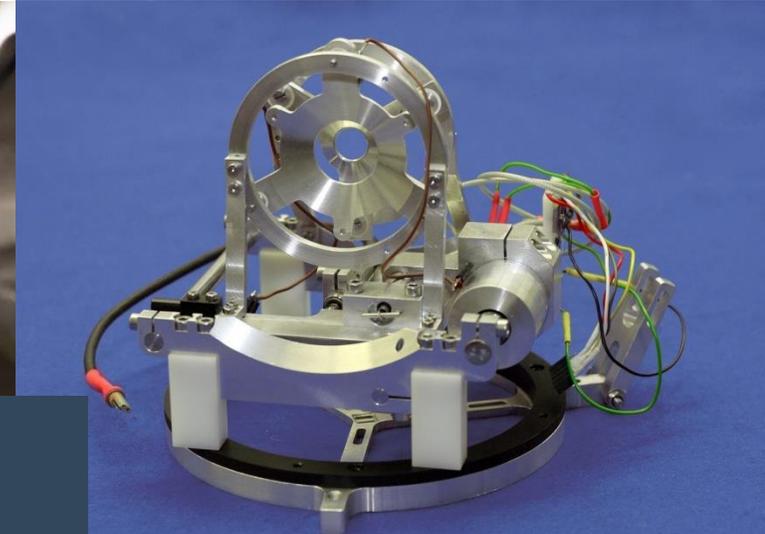
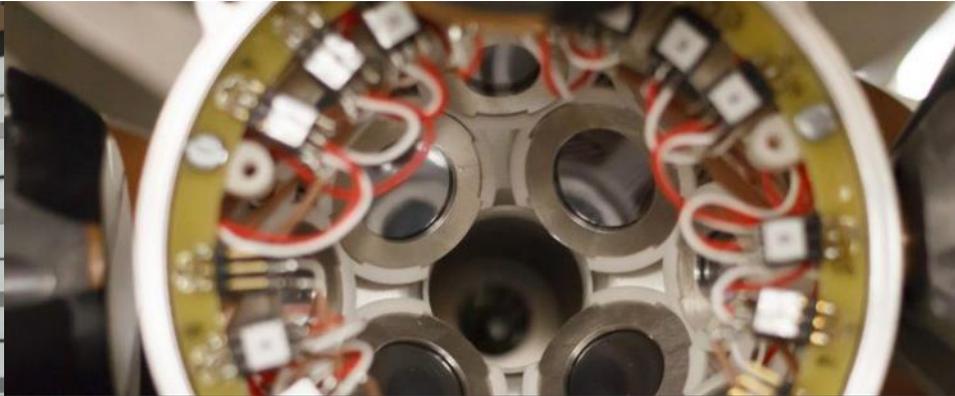
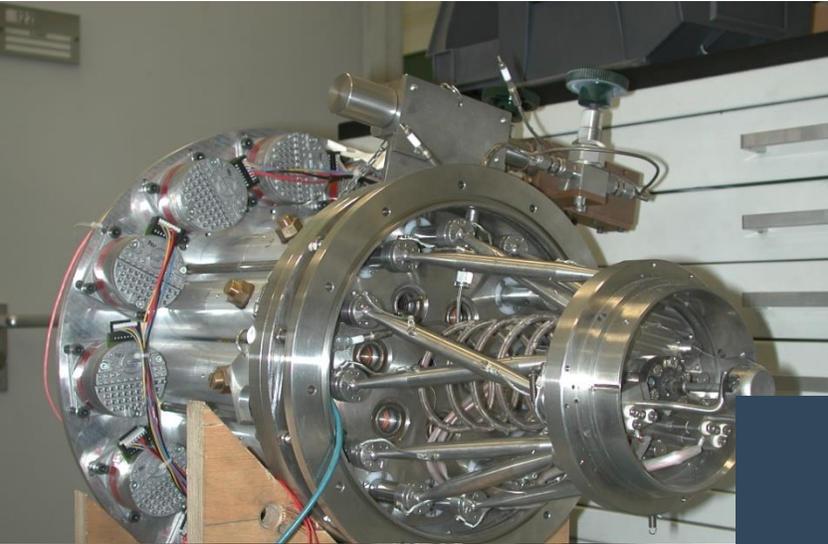
Groups:

- Prof. Dr. Jan Jolie
- Prof. Dr. Peter Reiter
- Prof. Dr. Andreas Zilges
- Prof. Dr. N.N. (AMS)

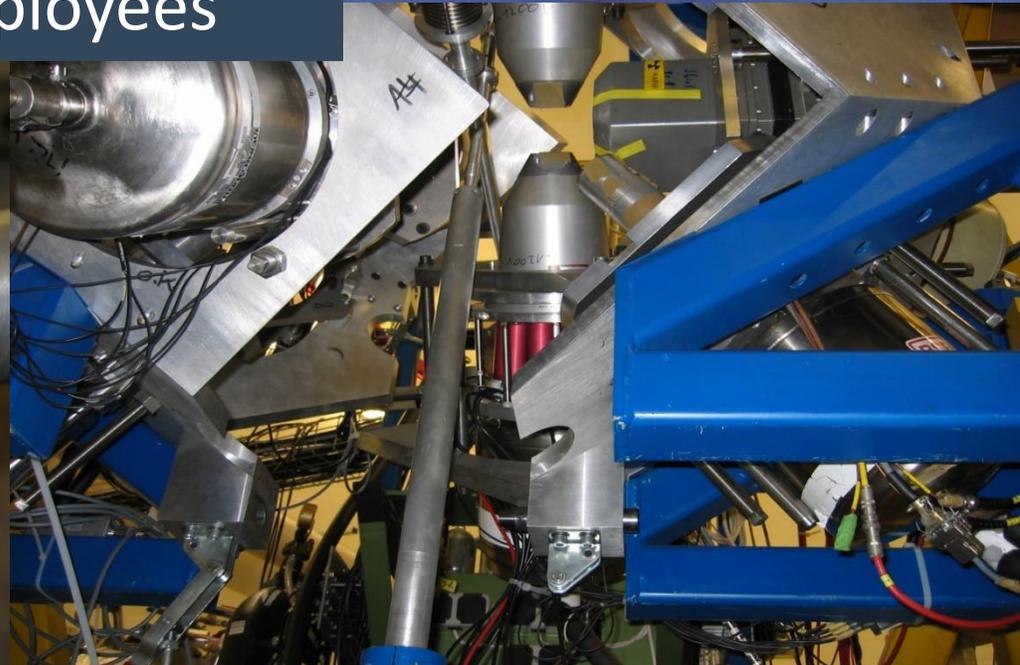
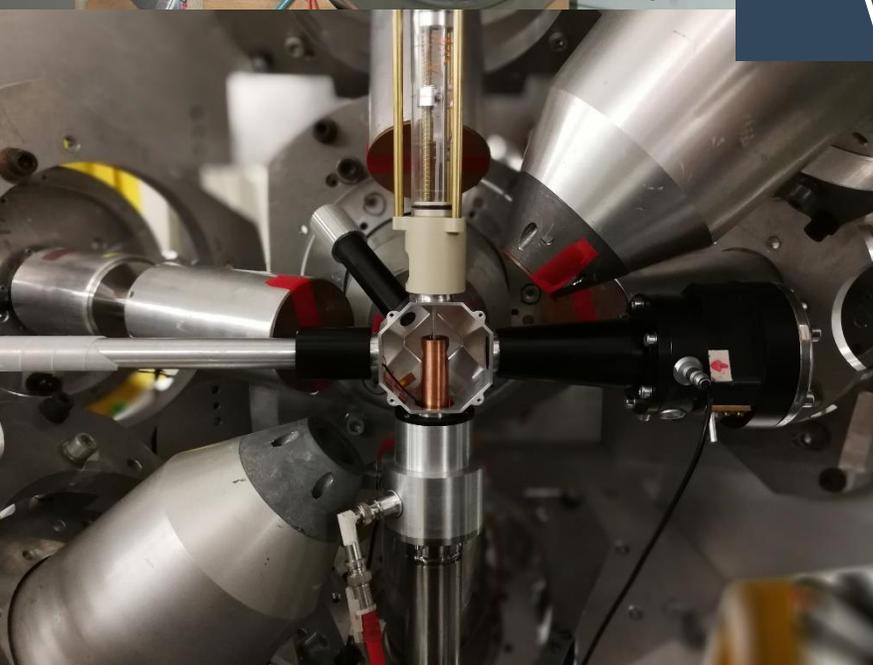
Scientific staff:

- 4 Senior scientists (including 1 lecturer)
- 8 Postdocs
- Around 25 doctoral students
- 20-30 Bachelor and Master students
- 18 technicians (workshop and accelerators)
- 3 administrative staff

Mechanical Workshop



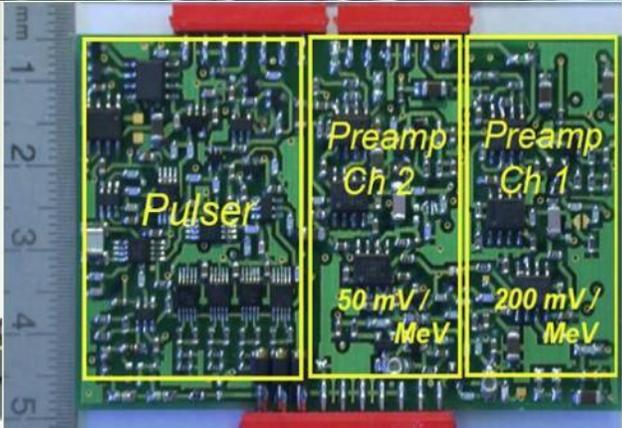
Fully equipped mechanical workshop with 15 employees



Electronics workshop



Electronics development workshop

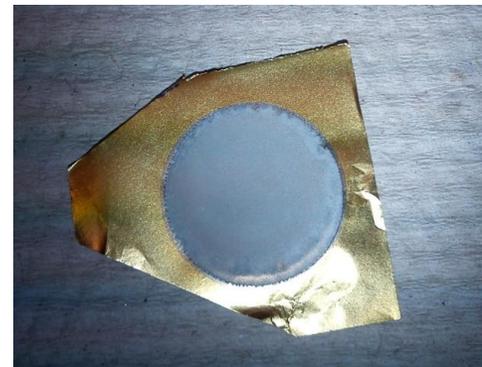
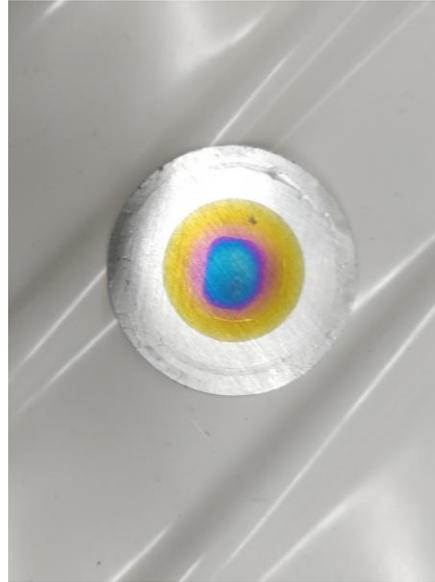


Target laboratory

In-house target production via:

- Electrolysis
- Evaporation
- Rolling of self-supporting foils

Target laboratory



Accelerators @ Cologne

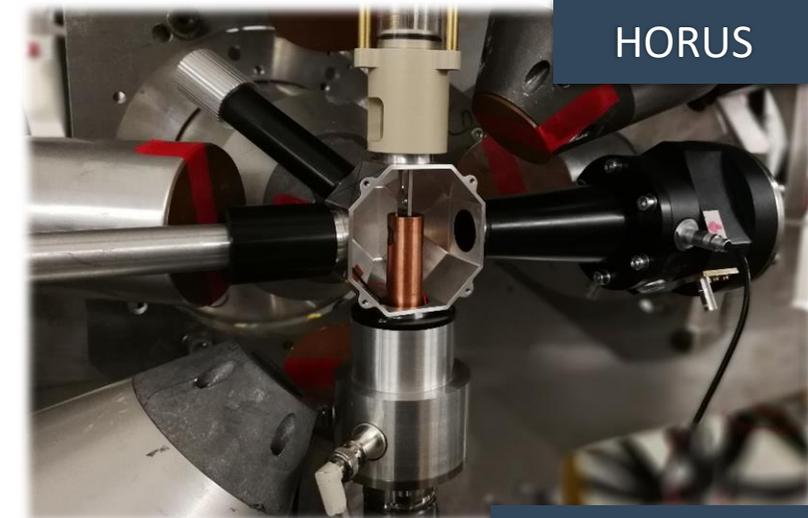


- Up to 10 MV terminal voltage
- Three ion sources:
 - Duoplasmatron (p, ^3He , ^4He)
 - Sputter source (up to $A=127$)
- Beam intensities:
 - 800 nA (p)
 - 200 nA (^4He)

- Operational since 2011
- 6 MV terminal voltage
- Standard isotopes: ^{10}Be , ^{14}C , ^{26}Al , ^{36}Cl , (^{244}Pu)
- Commissioning for p, ^4He pending

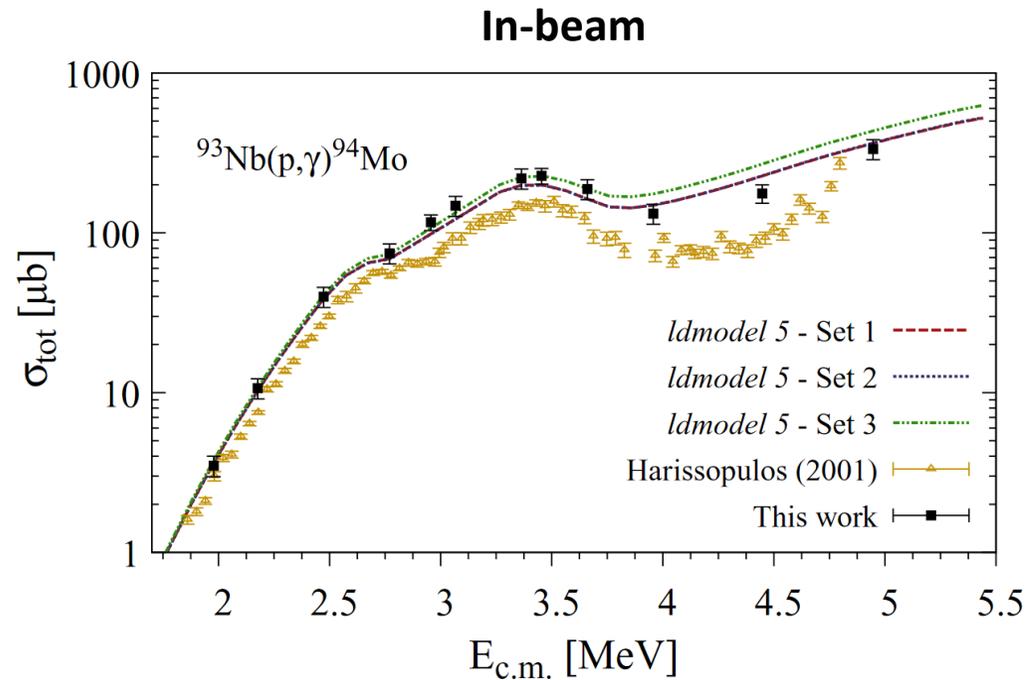
Research: Nuclear Astrophysics

- Total and partial cross-section measurements of charged-particle induced reactions for:
 - γ -process nucleosynthesis
 - Weak r-process in v-driven winds
- Investigation of nuclear physics input-parameter for the Hauser-Feshbach statistical model
 - Optical-model potentials
 - γ -ray strength functions
- In-beam technique with HPGe detectors at HORUS
- Activation method using low-background Clover setup

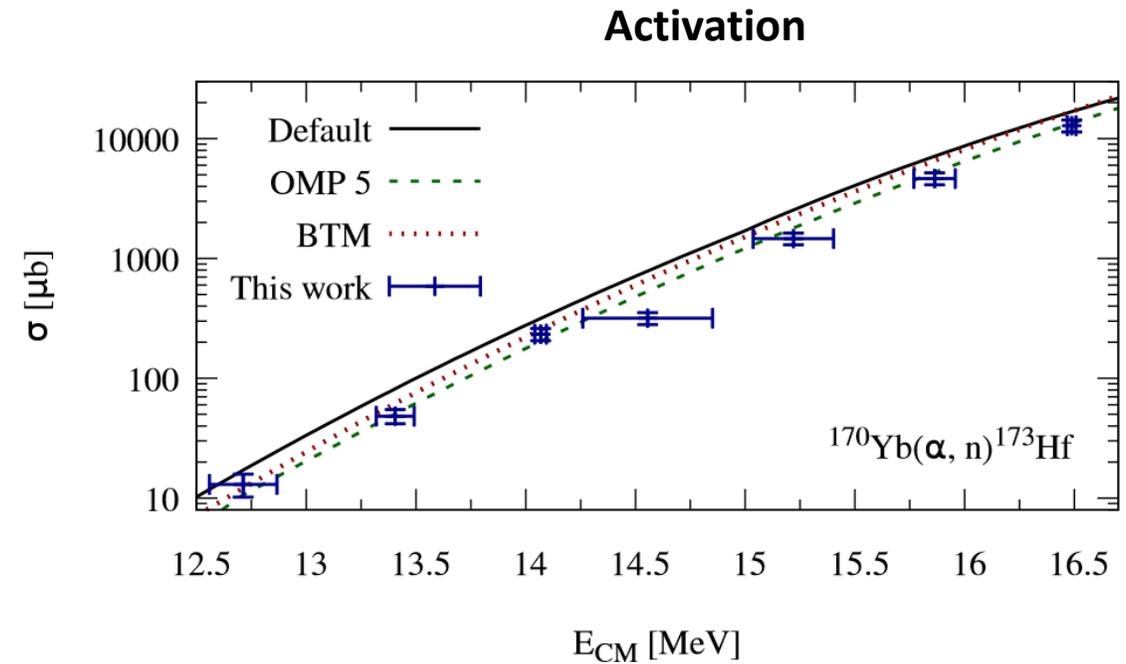


Research examples

- Measurement of proton- and α -induced reaction cross sections:



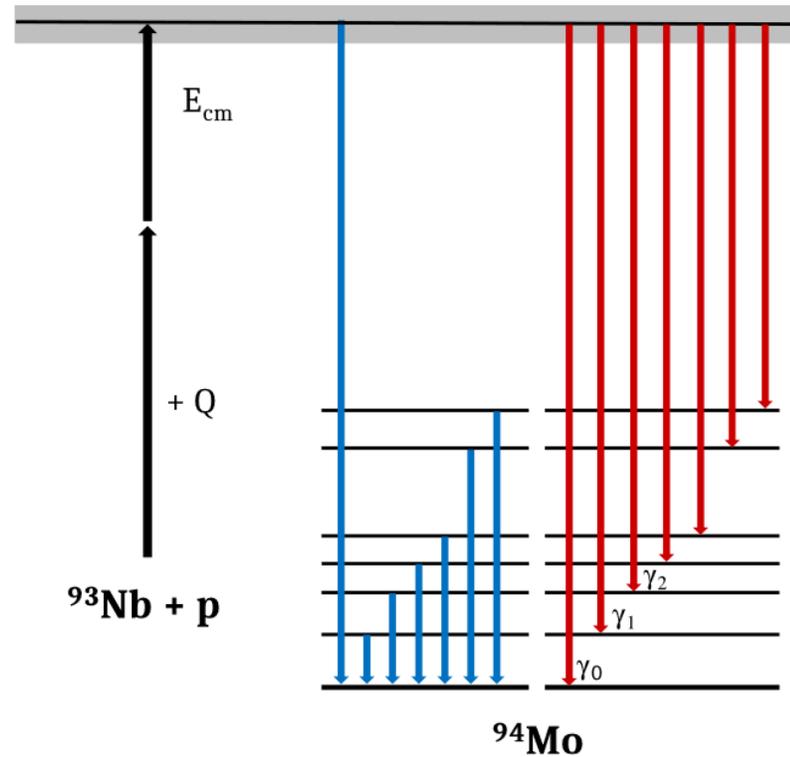
F. Heim *et al.*, Phys. Rev. C **101**, 035807 (2020)



M. Müller, F. Heim *et al.*, to be submitted

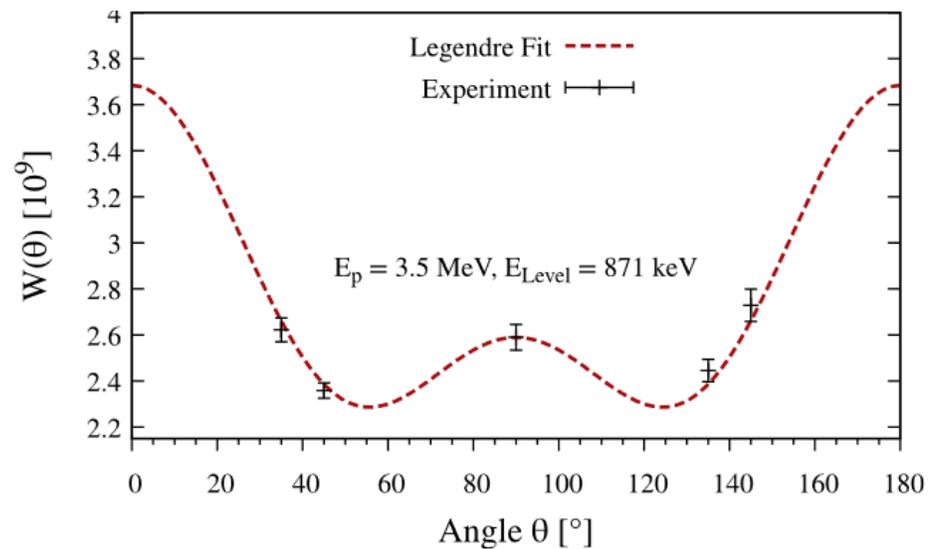
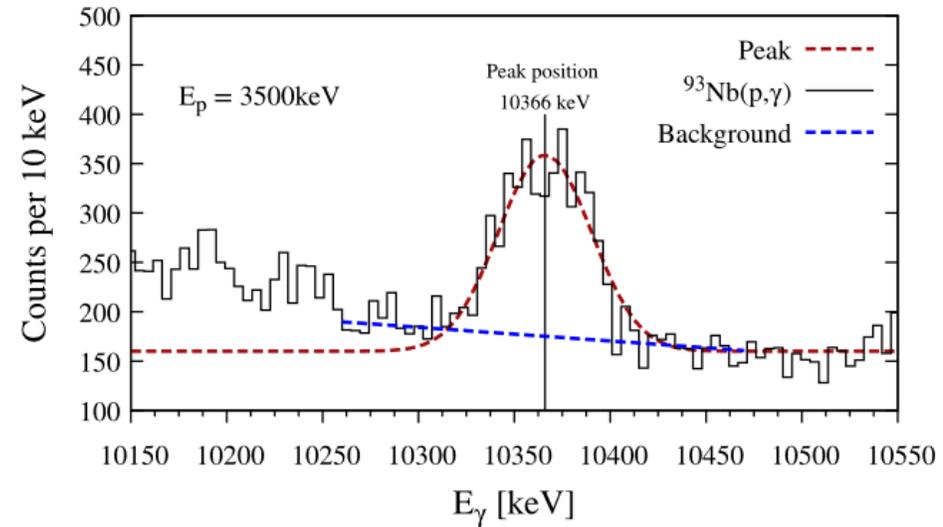
Research examples

- Measurement of **primary γ rays** and angular distributions:



F. Heim *et al.*, Nucl. Instrum. Methods A **966**, 163854 (2020)

F. Heim *et al.*, Phys. Rev. C **103**, 025805 (2021)



Contact

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