



# Progress Report

NRDC Meeting  
23-24 May 2011, Vienna

## ATOMKI

Institute of Nuclear Research  
of the Hungarian Academy of Sciences  
Debrecen, Hungary  
[www.atomki.hu](http://www.atomki.hu)

S. Takács, F. Tárkányi, B. Király



# Staff

- The staff of the experimental research group consists of six physicists and two chemists
- All are engaged in practical application of the ATOMKI cyclotron
- Three of the physicists are involved in data compilation in EXFOR and/or data evaluation for other databases in part time  
(B. Király, S. Takács, F. Tárkányi)



# Main task and profile of the Atomki Nuclear Reaction Data Group

- Investigation of low and medium energy charged particle nuclear reactions
- Measuring cross section and yield data
- Compilation and evaluation of experimental data
- Applications, isotope production, TLA
- The work is connected to international projects and everyday applications



# Experimental works

- Systematic measurement of CP excitation functions up to 100 MeV protons and 50 MeV deuterons for:
  - production of medical radioisotopes
  - CP beam monitor reactions
  - activation cross sections for accelerator and target technology
  - Thin Layer Activation (TLA)



# Collaborating partners

- Cyclotron Laboratory, Vrije Universiteit Brussel (VUB), Brussels, Belgium
- Cyclotron and Radioisotope Centre (CYRIC), Tohoku University, Sendai, Japan
- Nuklearchemie (INB-4) für Neurowissenschaften und Biophysik, Forschungszentrum Julich, Julich, Germany
- Institute of Theoretical Physics, Institute of Physics and Power Engineering (IPPE), Obninsk, Russia
- Nuclear Data Section, Division of Physics and Chemistry, IAEA, Vienna, Austria
- Division of Advanced Technology for Medical Imaging of the National Institute of Radiological Sciences, Chiba, Japan
- Radionuclide Production Laboratory of the iThemba Laboratory for Accelerator Based Sciences, Somerset West, South Africa



# Compilations and evaluations

- EXFOR Compilations of experimental works from Debrecen, Brussels, Julich
  
- Evaluations
  - Database for production of therapeutic radionuclides
  - Database for fusion evaluated nuclear data library (FENDL)
    - In collaboration with the IAEA
    - Proton and deuteron activation cross sections
    - Up to 100 and 50 MeV,
    - Number of reactions: ~1000
    - Targets: Ag, Al, C, Co, Cr, Cu, Fe, Li, Mn, Mo, N, Nb, Ni, O, P, S, Sb, Si, Sn, Ta, Ti, V, W, Au, Cd, In, Ir, Mg, Pb, Pd, Pt, Rh, Y, Zn, Zr
    - Preparation of the list of the missing, duplicated and wrong EXFOR entries is in progress
  
  - Database for thin layer activation technology
    - In collaboration with the IAEA
    - Recommended nuclear reaction cross section database
    - 50 nuclear reactions



# Other activities

- Review of new publications in the field of nuclear reaction data
- Reporting our new results on nuclear data
  - Publications (2009-2011).....47
  - Presentations at international conferences (2008-2010) .....15



**Thank you for your attention!**