



**International Atomic Energy Agency**

# **WPEC Action: IAEA-NDS**

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**WPEC, Antwerp, 8/9 April 2005**

# Summary of known ND measurements, 2004/05

1. Beta decay and decay heat -  $\beta$ -strength distributions of some of the most relevant decay-heat radionuclides (Spain, Hungary, UK and Finland; *Algora et al*)
2. Neutron capture cross-section measurements -  $^{109}\text{Ag}(n, \gamma)^{110\text{m}}\text{Ag}$ ,  $^{186}\text{W}(n, \gamma)^{187}\text{W}$  and  $^{158}\text{Gd}(n, \gamma)^{159}\text{Gd}$  reactions measured at 55 and 144 keV (Vietnam; *Vuong Huu Tan et al*)
3. Charge changing interactions of ultra-relativistic Pb nuclei (Italy; *Scheidenberger et al*)
4. Measurements of neutron cross sections at n-TOF facility, CERN - nuclear astrophysics (capture) and ADS (capture, fission, (n, 2n) and (n, 3n))
5. Neutron capture cross section of  $^{135}\text{Cs}$  - determined at  $E_n$  of 30 and 500 keV (Italy; *Patronis et al*)
6. Neutron capture cross sections of  $^{208}\text{Pb}$  and  $^{209}\text{Bi}$  (Italy; *Ratzel et al*)
7. Coulomb and nuclear break-up of halo nucleus  $^{11}\text{Be}$  - Pb and C targets, 70 MeV/nucleon, at RIKEN (Italy; *Fukuda et al*)



# Summary of known ND measurements, 2004/05

8. Stellar He burning of  $^{18}\text{O}$ : low-energy resonances -  $^{14}\text{N}(\alpha, \gamma)^{18}\text{F}(\beta^+)^{18}\text{O}(\alpha, \gamma)^{22}\text{Ne}$ , study of  $\alpha$  capture on  $^{18}\text{O}$  (Germany; Dababneh *et al*)
9.  $^{95}\text{Mo}(n, \alpha)$  cross section from 1 eV to 500 keV - at ORELA, Oak Ridge (Germany, Rapp *et al*)
10. Neutron capture cross section of  $^{139}\text{La}$  -  $kT = 300$  keV of  $31.6 \pm 0.8$  mb is 18% lower than recommended ( $38.4 \pm 2.7$  mb), and less uncertain (Germany; O'Brien *et al*)
11. Fundamental studies on isomeric cross sections -  $^{52m}, ^{52g}\text{Mn}$  production from  $^{52}\text{Cr}(p, n)$ ,  $^{52}\text{Cr}(^3\text{He}, t)$ ,  $^{54}\text{Fe}(d, \alpha)$  and  $^{54}\text{Fe}(^3\text{He}, \alpha p)$  reactions (Germany; Klein *et al*, and Zaman *et al*)
12. Nuclear reaction cross-section data for medical applications - positron emitters  $^{76}\text{Br}$ ,  $^{124}\text{I}$ ,  $^{82}\text{Sr}(^{82}\text{Rb})$ , and  $^{103}\text{Pd}$ ,  $^{140}\text{Nd}$ ,  $^{169}\text{Y}$ ,  $^{192}\text{Ir}$  (Germany; Qaim *et al*)
13. Alpha-Particle Emission Probabilities in the Decay of  $^{235}\text{U}$   
EUROMET project 591 (NPL, CIEMAT, IRMM, Univ. Extramadura)  
-  $P(\alpha)$  values for 13 alpha emissions with improved uncertainties

# Summary of known ND measurements, 2004/05: India

14. Basic nuclear physics experiments (see Web sites)
  - FOTIA accelerator in BARC,
  - Pelletron accelerator in TIFR,
  - cyclotron at VECC, Kolkata,
  - 15UD Pelletron accelerator, NSC, New Delhi
15. Fission yield measurements - mainly absolute yields (Pandey et al, and Iyer et al)
16. 14-MeV neutron activation measurements - Aligargh Muslim University, Cockcroft-Walton accelerator (no longer in operation); more than 100 reactions being compiled in standard EXFOR format for all old experimental neutron and charged-particle cross-sections
17. Integral shielding experiments - APSARA facility (Dravid and Indira)
18. Integral reactor irradiation experiments (Ganesan)
  - continuous programme of irradiating thorium in research reactors
  - thorium bundles irradiated in 220-MWe PHWRs (KAPS), undergoing PIE and chemical analysis
  - measurements of  $^{233}\text{U}$  breeding rates planned at PURNIMA lab

# Summary of known ND measurements, 2004/05: India

19. Neutron total cross sections by n-TOF technique
  - neutron-chopper studies based on neutron time-of-flight measurements with 100MW DHRUVA reactor facility
  - n-TOF energy analyses - Nuclear Physics Division, Pelletron laboratory, Tata Institute of Fundamental Research, to characterize neutron output for heavy ion fusion reaction experiments
  - proposals being made in India to build 100-kW electron LINAC based neutron source
  - India hoping to join Phase 2 of CERN n-TOF collaboration
20. India mirroring international IAEA-NDS nuclear data site (<http://www-nds.indcentre.org.in>) at BARC

# Summary of **known** ND measurements, 2004/05

**If you don't tells us, we won't know**