



# **MANREAD – Minor actinide nuclear reaction data Status**

Arjan Plompen

# MANREAD

- *Co-ordinated Research Project Nuclear Data Section IAEA*
- *Started by A. Mengoni*
- *Currently co-ordinated by N. Ojuka*
- *CRP term is finished*
- *Report is being assembled*

# Simplified objectives

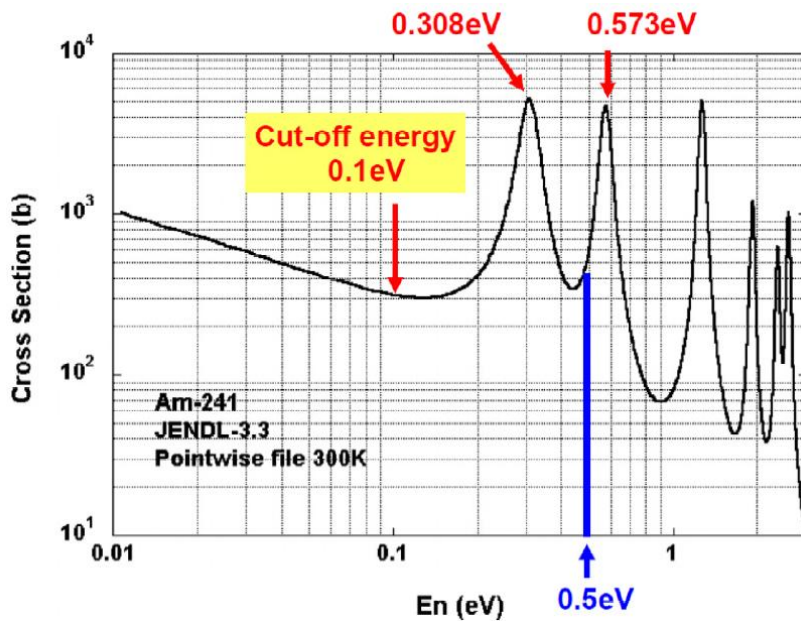
- *Assess status of Minor actinide reaction data*
- *Outlook for improvement*

# Components

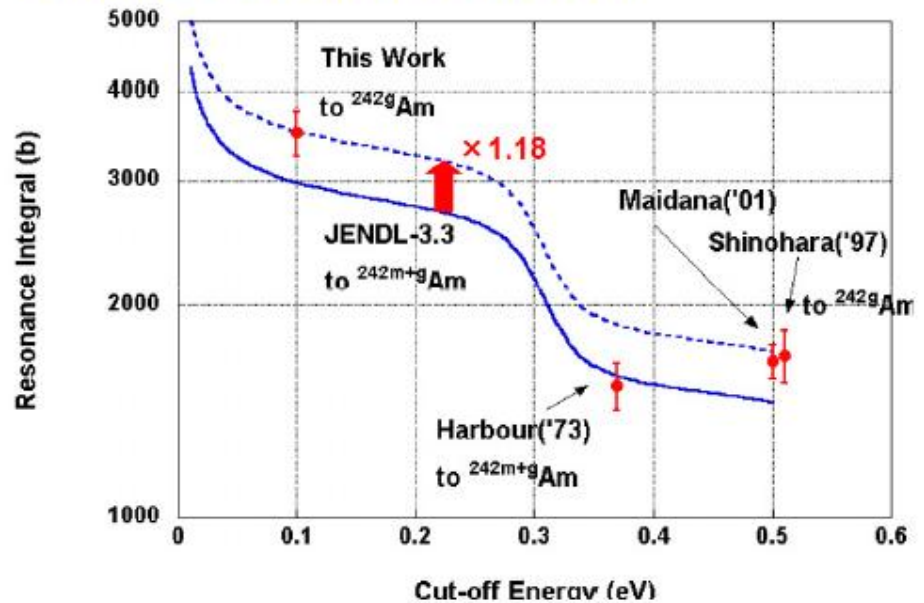
- *Check of available experimental data*
- *Reports from recent and ongoing experiments*
- *A few experiments included: Budapest Am-241(n,g), Athens Am-241(n,2n), Troisk lead slowing down spectrometer for Cm fission*
- *Feedback from evaluations: JAEA, CIAE, IPPE, Minsk*

# Example assessment: $^{241}\text{Am}(n,g)$ RI

Y. Nagai

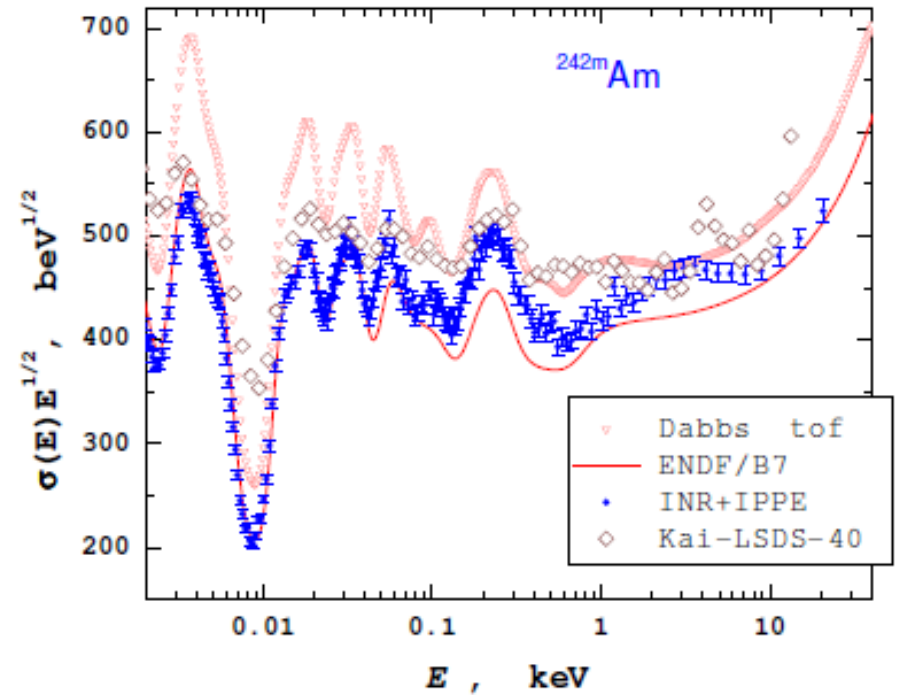
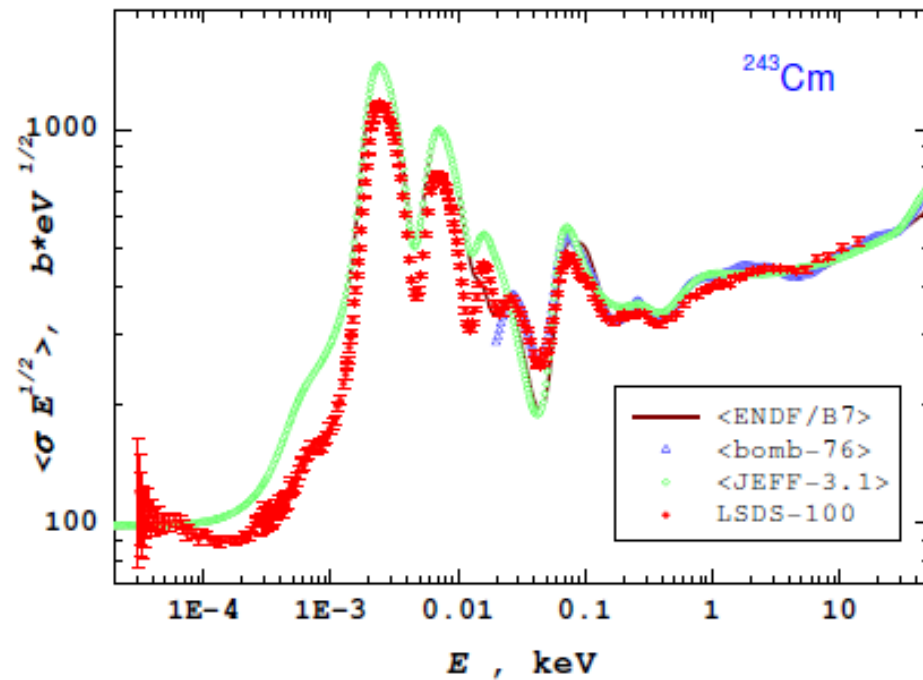


## Dependence of R.I. on Cut-off Energy



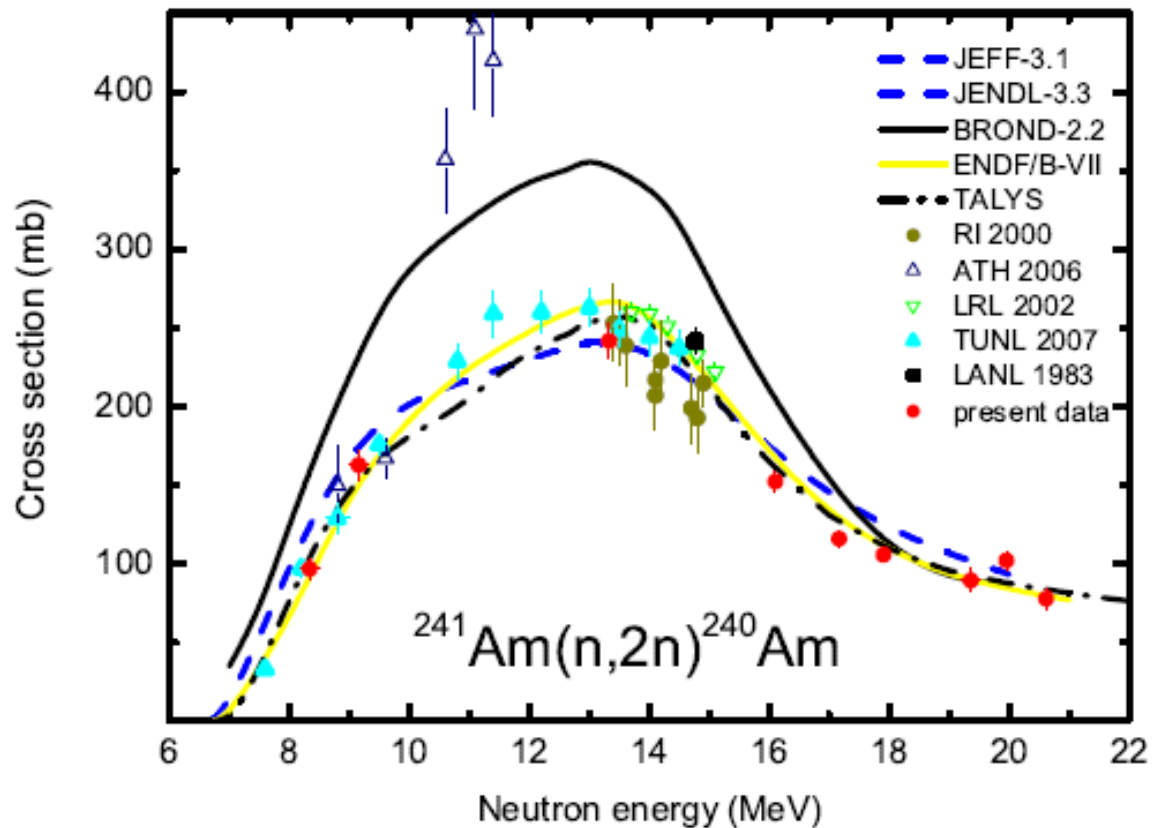
# Example measurement: fission LSDS

## Fursov



# Example recent experiments

## IRMM, CEA



# Example measurements

## n\_TOF, $^{237}\text{Np}(n,g)$

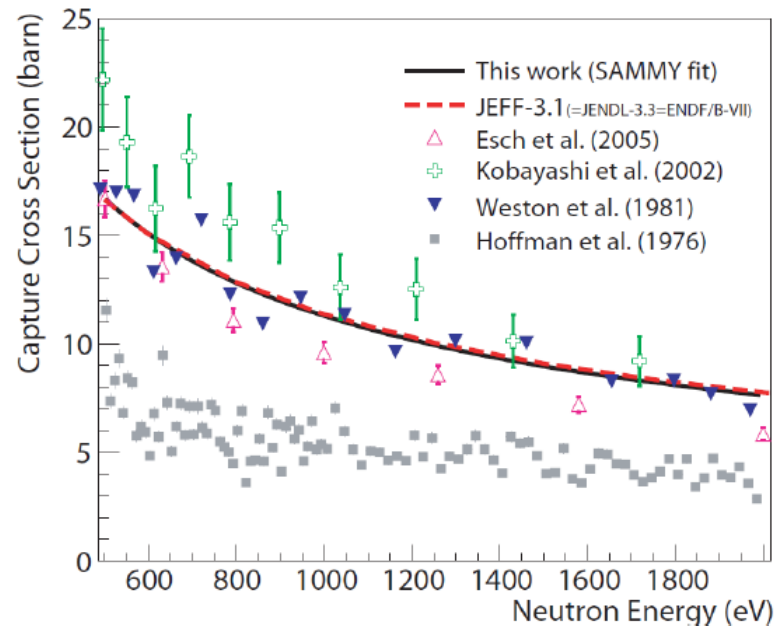
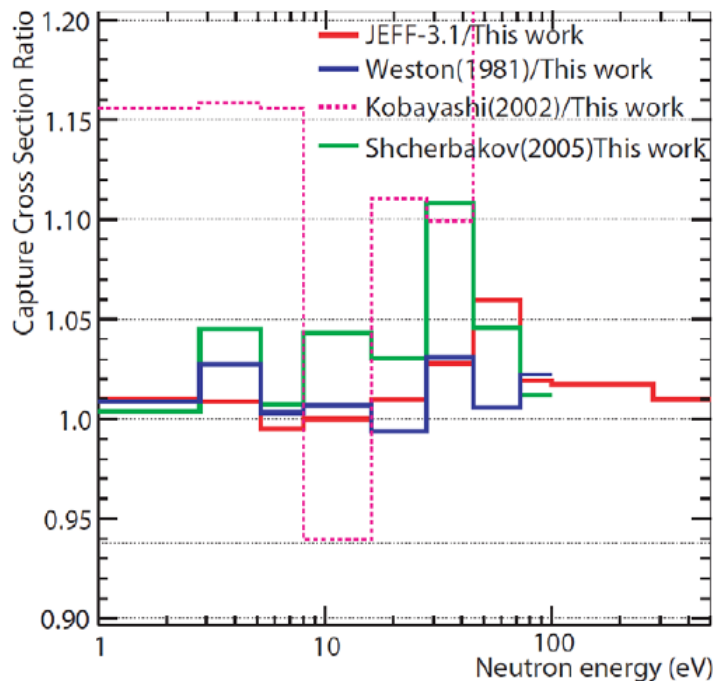
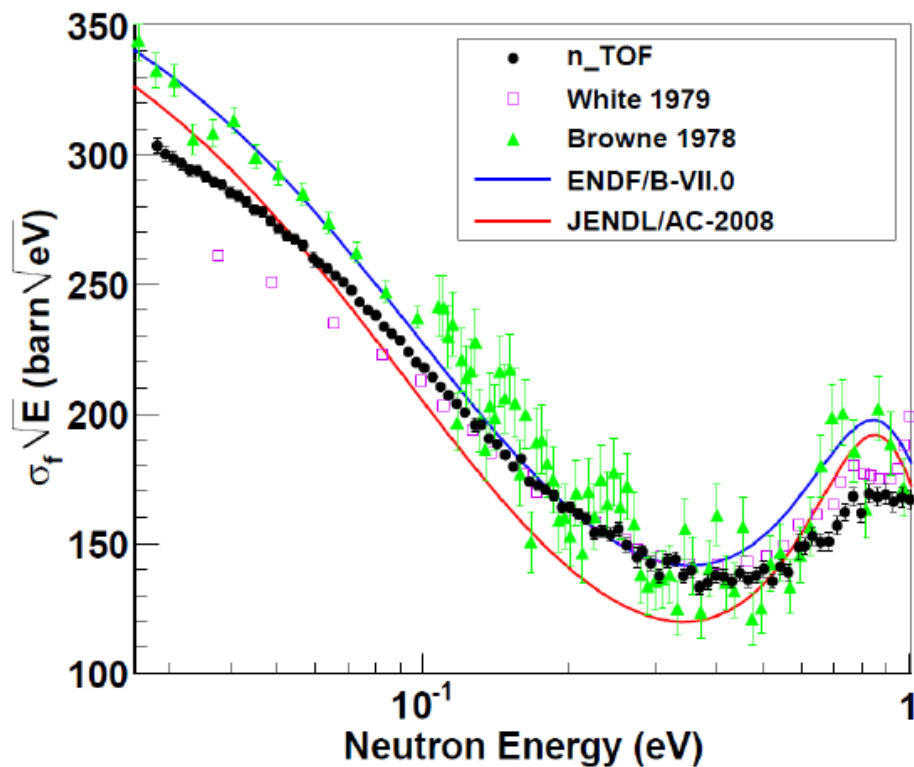
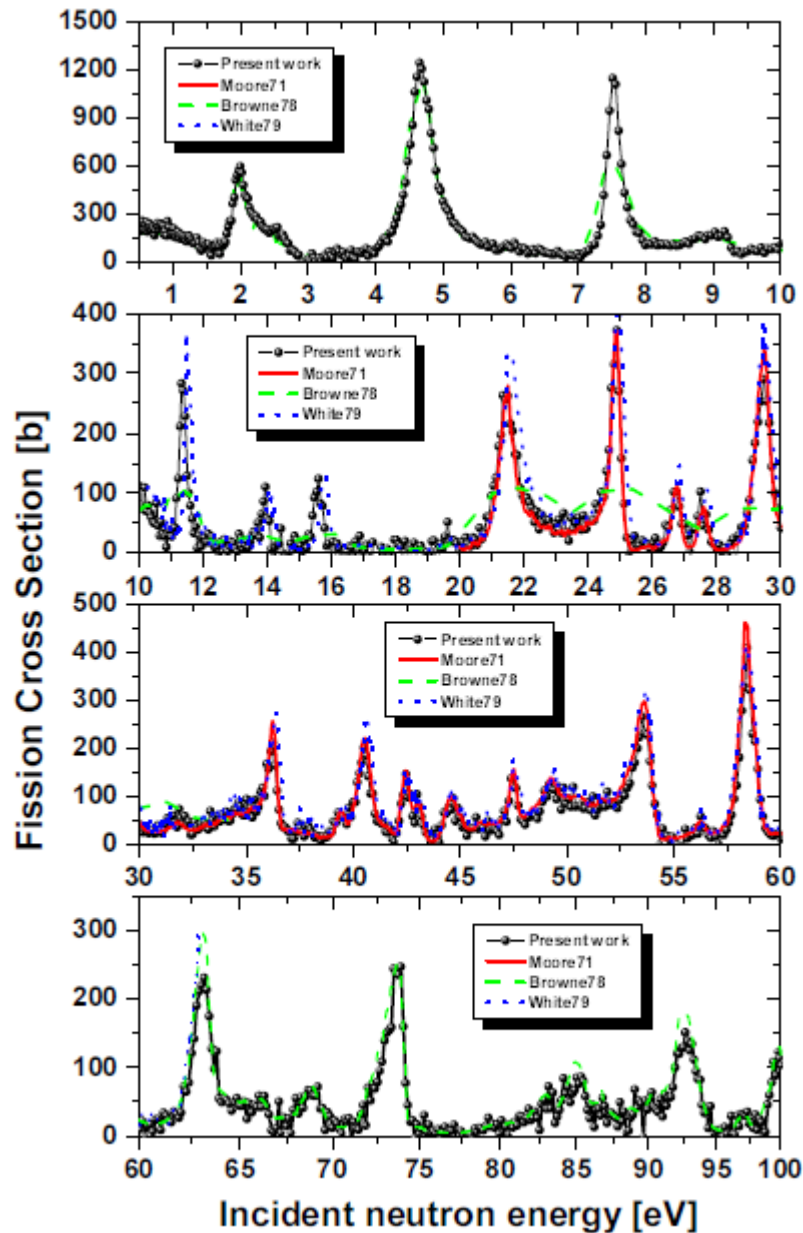


Figure 12: The  $^{237}\text{Np}$  capture cross section measured at n\_TOF. On the left panel, the average capture cross section from 1 to 500 eV is compared to the values from previous measurements and evaluations. In the right panel, the cross section in the Unresolved Resonance Region, from 600 eV to 2 keV, is shown, together with previous results and with JEFF-3.1 evaluation.

# Example experiments: $^{245}\text{Cm}$

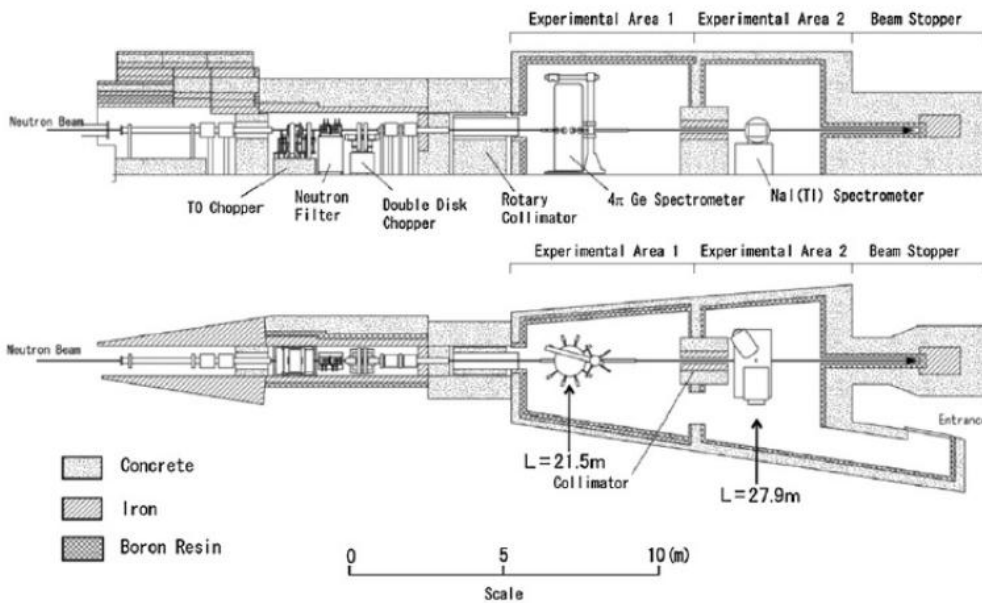
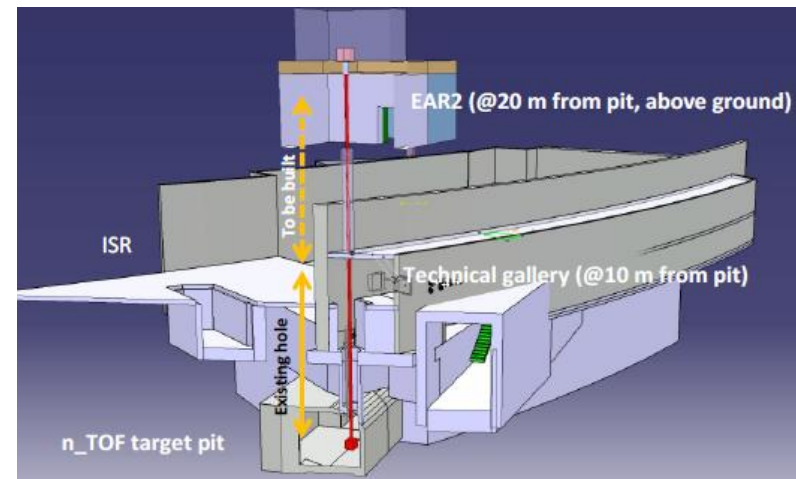


N\_TOF



IRMM

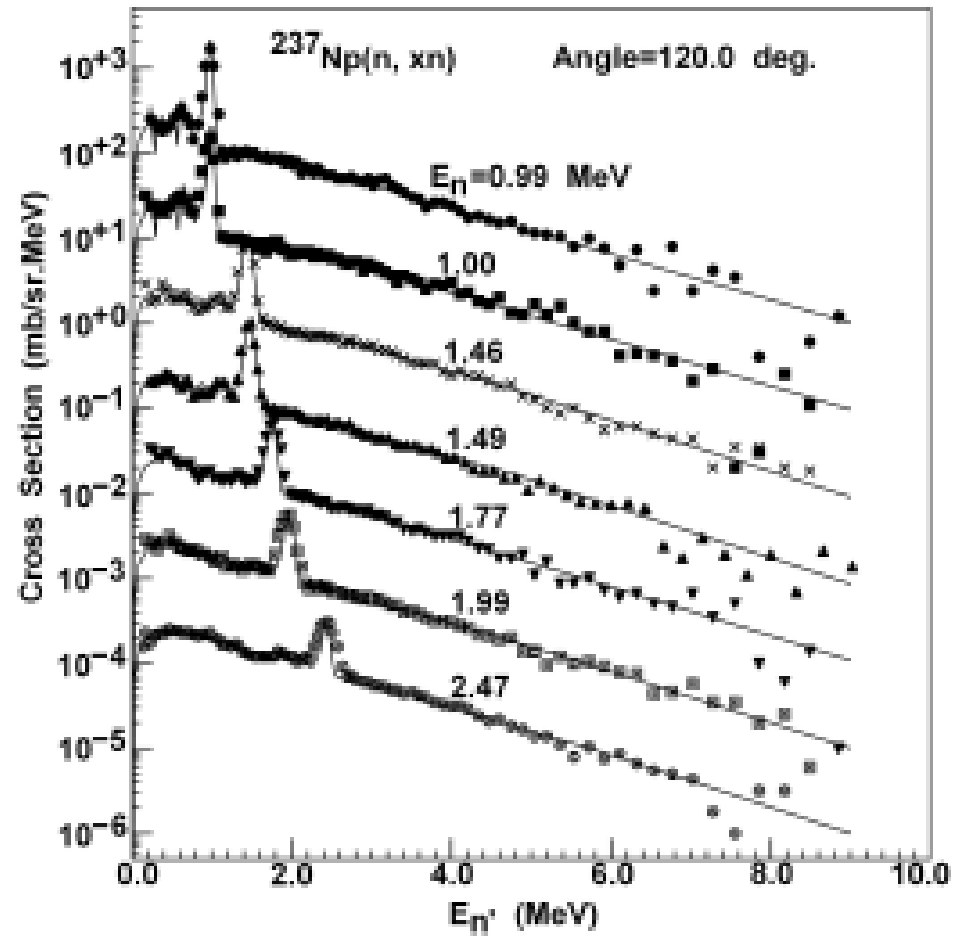
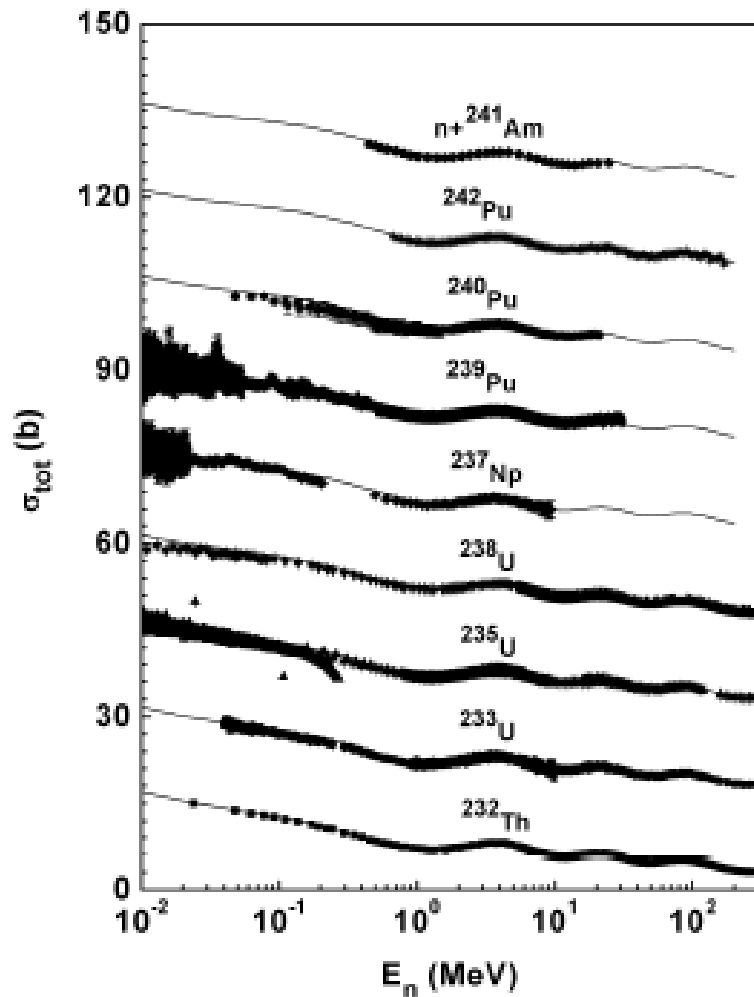
# Outlook experiments



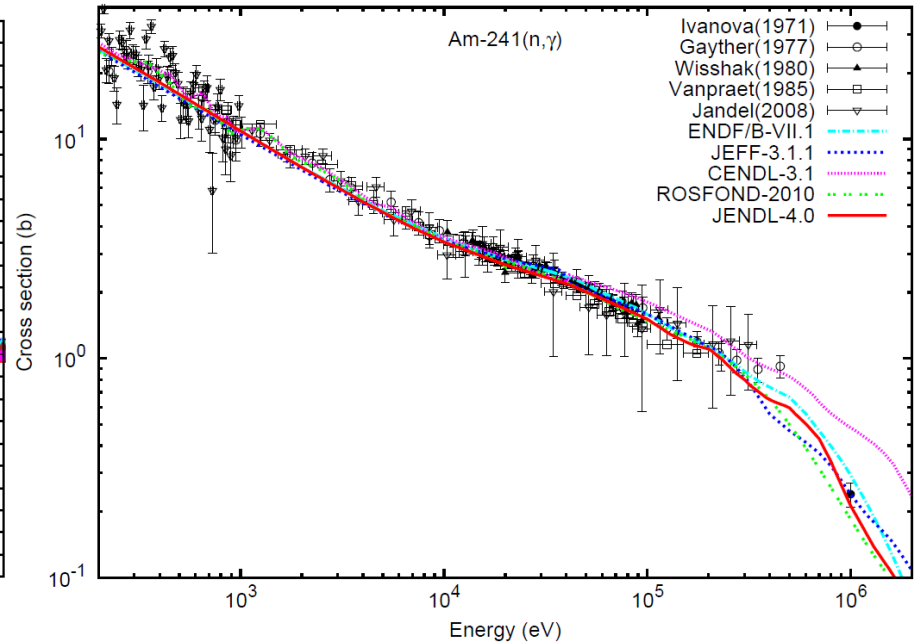
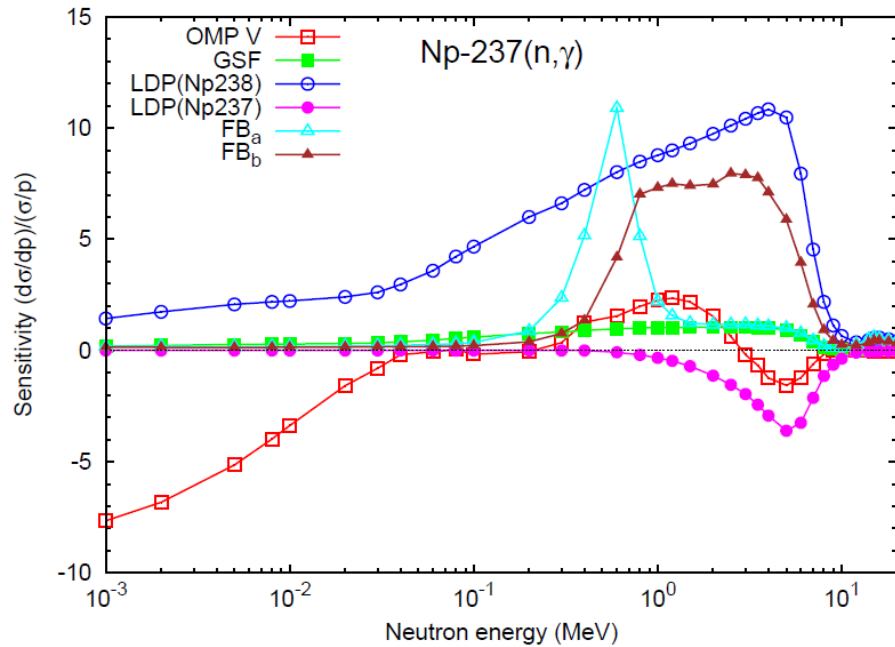
*ANNRI/J-PARC  
N\_TOF EAR-2  
LANL Stacking  
NFS  
FRANZ*

Figure 2.23: Side and top view of the ANNRI (copy from ref. [86])

# Examples Evaluation (Han, CIAE)



# Examples evaluation (Iwamoto, JAEA)



# Summary

*Final report being drafted*  
*Significant effort on MA is ongoing*  
*Promise for improvement*  
*Some very difficult points*

*Cm capture*

*MA inelastic*

*Accuracy of fission*

*Promising theoretical developments*

*Good recent experimental effort*

*ANDES:*

*Pu-240, Pu-242 (n,f)*

*Am-241(n,g)*

*Pu-238(n,f) and Cm(n,g) by surrogate (feasibility)*