

GELINA

GAINS

- $^{23}\text{Na}(n,n')$, results finalized
- $^{\text{nat}}\text{Zr}(n,n')$, data taken
- $^{76}\text{Ge}(n,n')$, lower-limit 2039 keV (2 weeks)
- $^{\text{nat}}\text{Mo}(n,n')$, data taking started



Motivation

^{23}Na :

- FR coolant, coolant void reactivity
- HPRL request 4-8 % uncertainty

Mo, Zr:

- Inert fuel component
- Minor actinide heterogeneous fuel transmutation
- Fast critical or sub-critical
- ^{92}Mo (here no enriched samples)





Agence pour l'énergie nucléaire
Nuclear Energy Agency

NEA HPRL for nuclear data

www.nea.fr/html/dbdata/hprl/

Request ID	29		Status of the request	High Priority request	
Target	Reaction and process	Incident Energy	Secondary energy or angle	Target uncertainty	Covariance
11-NA-23	(n,inl) SIG	0.5 MeV-1.3 MeV	Emis spec.	See details	Y
Field	Subfield	Date Request created	Date Request accepted	Ongoing action	
Fission	Fast Reactors (SFR)	04-APR-08	12-SEP-08		

Energy Range	Target versus initial uncertainties (%)			
	Initial	ABTR	SFR	EFR
1.35 - 2.23 MeV	13		9	
0.498 - 1.35 MeV	28	10	4	8

(n, tot) SIG
 (n, f) n spectrum
 (n, f) n spectrum
 (n, inl) SIG
 (n, f) SIG
 (n, f) SIG
 (n, f) SIG
 (n, f) SIG

The list is mainly for Nuclear Data E

For more information see request list.

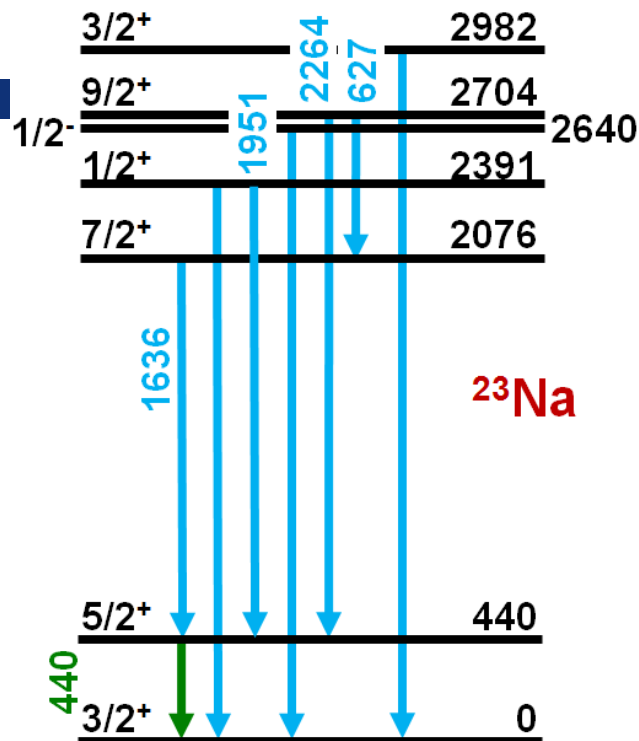
Requests are of

1. High priority
2. General

Upper limit of energy 3.84 MeV
Total inelastic and level inelastic
(relies on decay data)

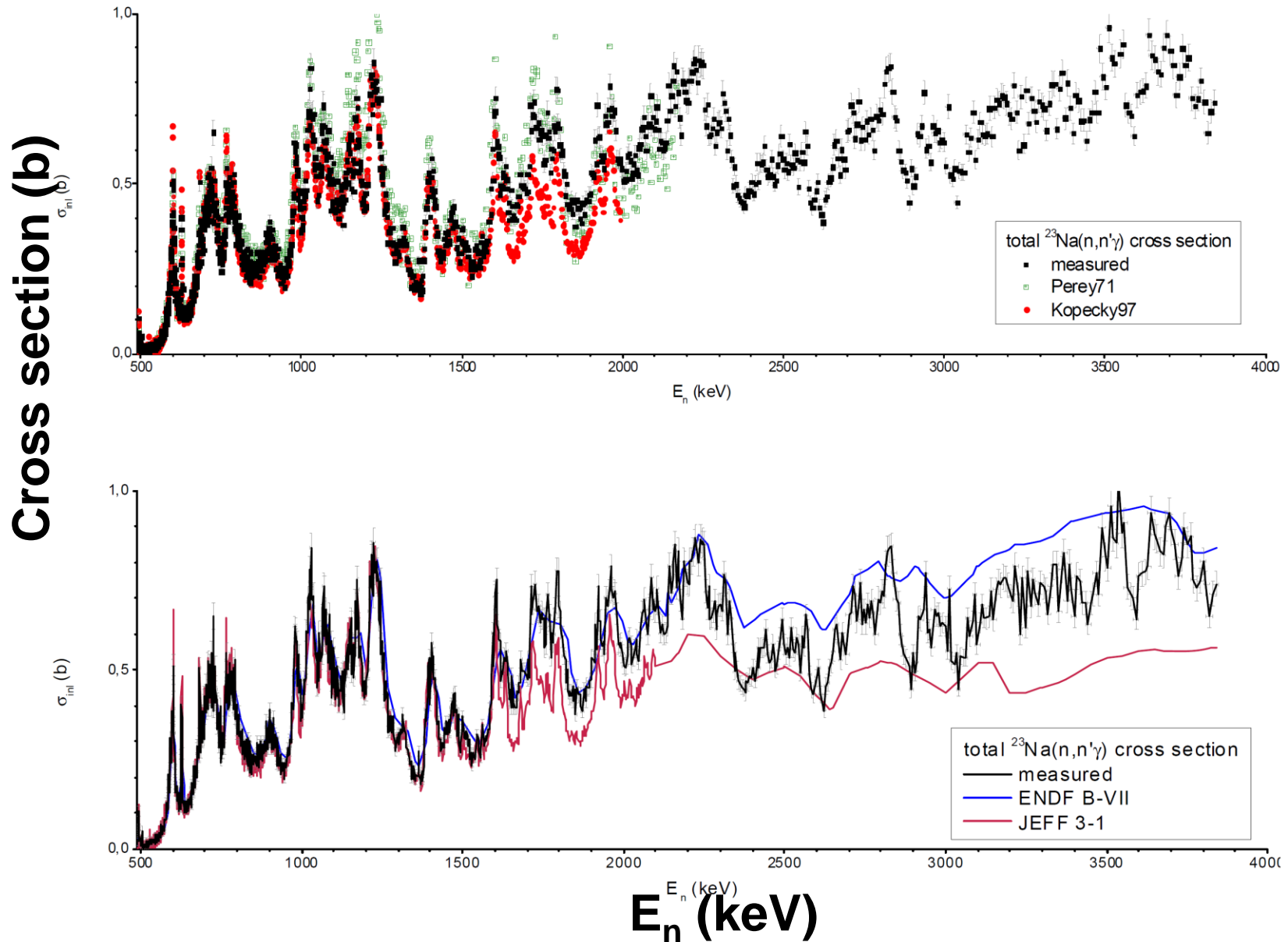
All statistics analysed
Careful efficiency check gamma-ray detectors

Final data delivered to CEA for benchmark testing
Report EUR 24871 EN.
Group cross section < 2.5 %!

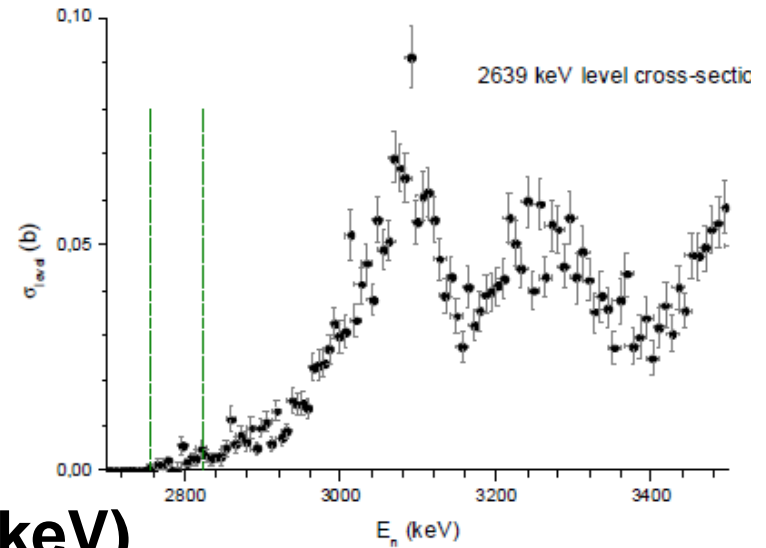
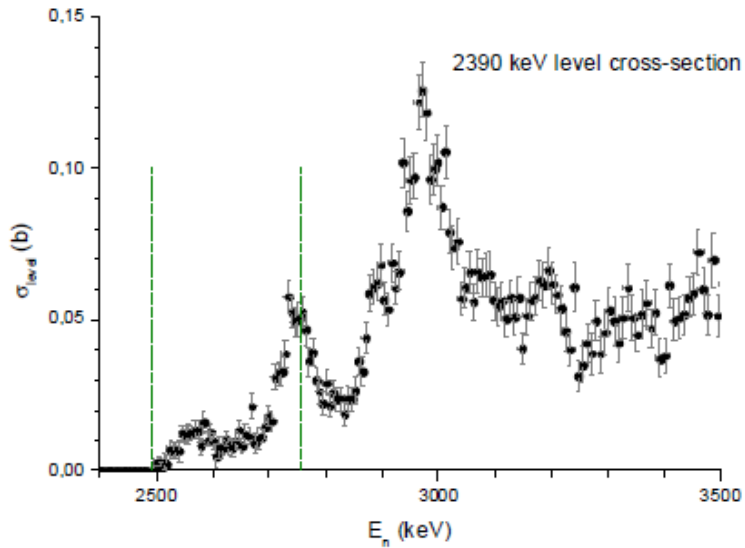
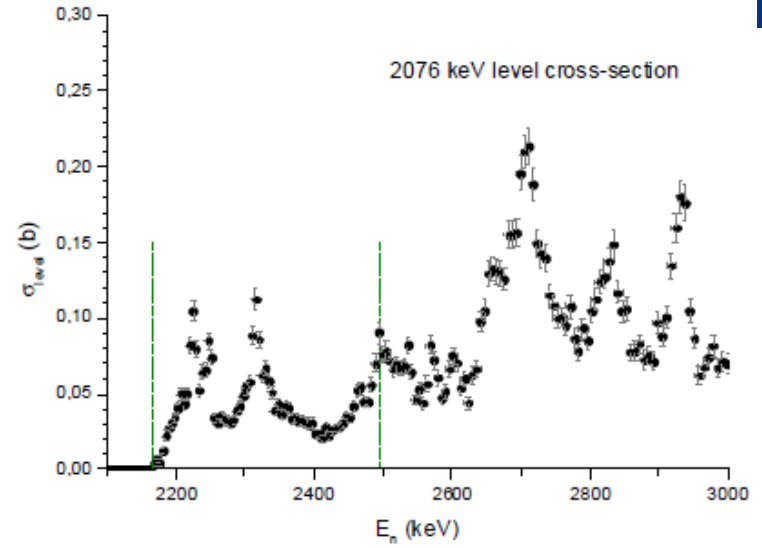
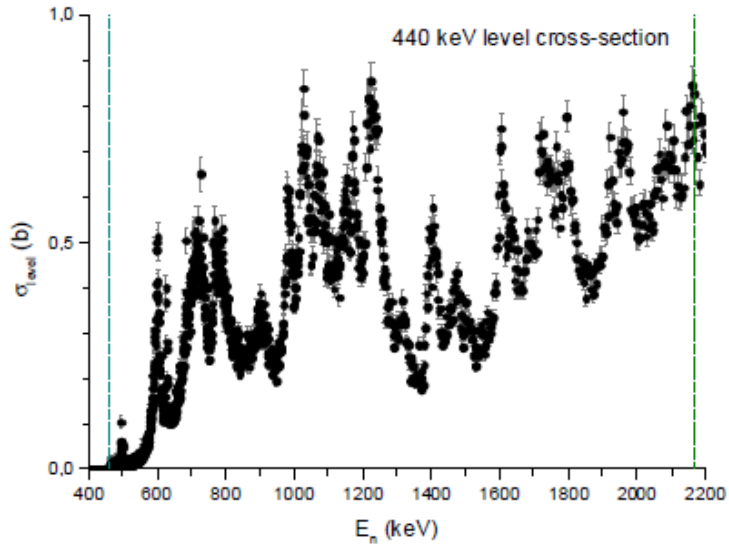


E_γ (keV)	E_{level1} (keV)	$J_{\pi1}$	$T_{1/2}$	E_{level2} (keV)	$J_{\pi2}$	I_γ	γ mult.
439.986(10)	439.990(9)	5/2+	1.24(8) ps	0	3/2+	100	M1+E2
1635.96(3)	2076.011(22)	7/2+	24(2) fs	439.990(9)	5/2+	100.00(14)	M1+E2
1950.652(21)	2390.732(13)	1/2+	594(81) fs	439.990(9)	5/2+	52.1(8)	E2
2390.599(18)	2390.732(13)	1/2+	594(81) fs	0	3/2+	100.0(6)	
2639.70(5)	2639.85(4)	1/2-	58(11) fs	0	3/2+	100	
2263.39(3)	2703.500(25)	9/2+	95(4) fs	439.990(9)	5/2+	100.0(9)	E2 (+M3)
2541.92(4)	2982.060(19)	3/2+	2.5(4) fs	439.990(9)	5/2+	70.1(3)	M1+E2

Table 1: Observed gammas from $^{23}\text{Na}(n,n'\gamma)$ and associated initial (1) and final (2) levels [10].



Cross section (b)



E_n (keV)

^{23}Na finalized

All statistics, improved efficiencies

Gamma-production, level cross sections

Good accuracy

Good agreement with earlier work

Sent to CEA for checking with benchmarks, resonance analysis

Paper was submitted

Zr data were taken and are under analysis

Mo data are being taken

On schedule

**Looking for a postdoc
Call issued
Deadline 15 December 2011**

Urgently needed to finalize ANDES tasks.

**irmm.jrc.ec.europa.eu/job_opportunities/fellowships_at_irmm/
(cat.30.10 D05-NP)**