TENDL-2009β: Chasing JEFF-3.2

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June 4, 2009

Contents

① Motivations:

$\Longrightarrow$ *a roadmap to consistent and state-of-the-art evaluations*

② Concept:

$\Longrightarrow$ *Exp. Data + Resonances +TALYS + Monte Carlo = TENDL-2009*

③ Is TENDL-2009 available and when ?

④ Content 1:

$\Longrightarrow$ *Neutrons, protons, deuterons, tritons, alphas, photons*

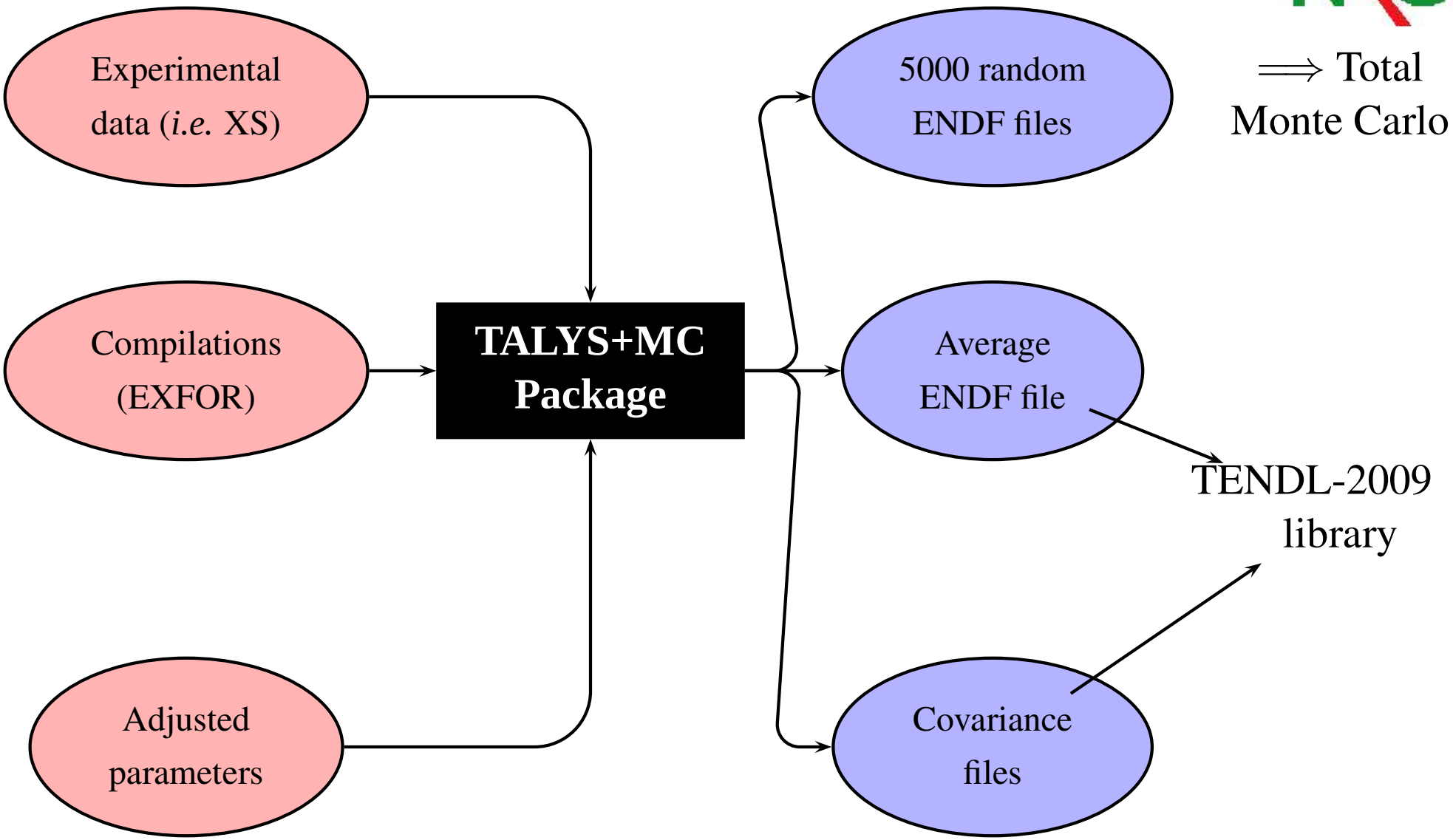
⑤ Content 2:

$\Longrightarrow$ *Neutrons:* ^{19}F *to* ^{281}Ds *(Z=110), from MF-1 to MF-34*

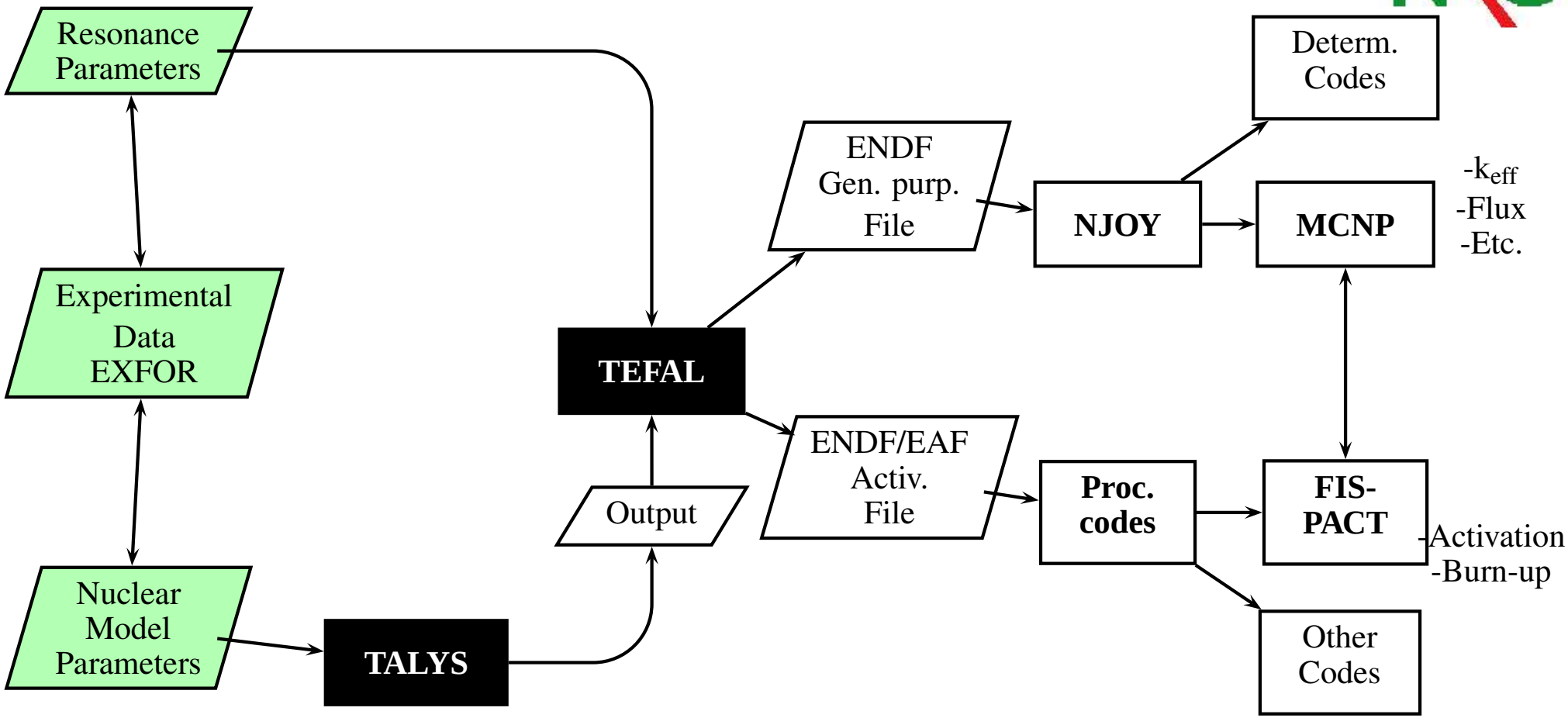
⑥ Examples

⑦ Conclusions and Future Improvements

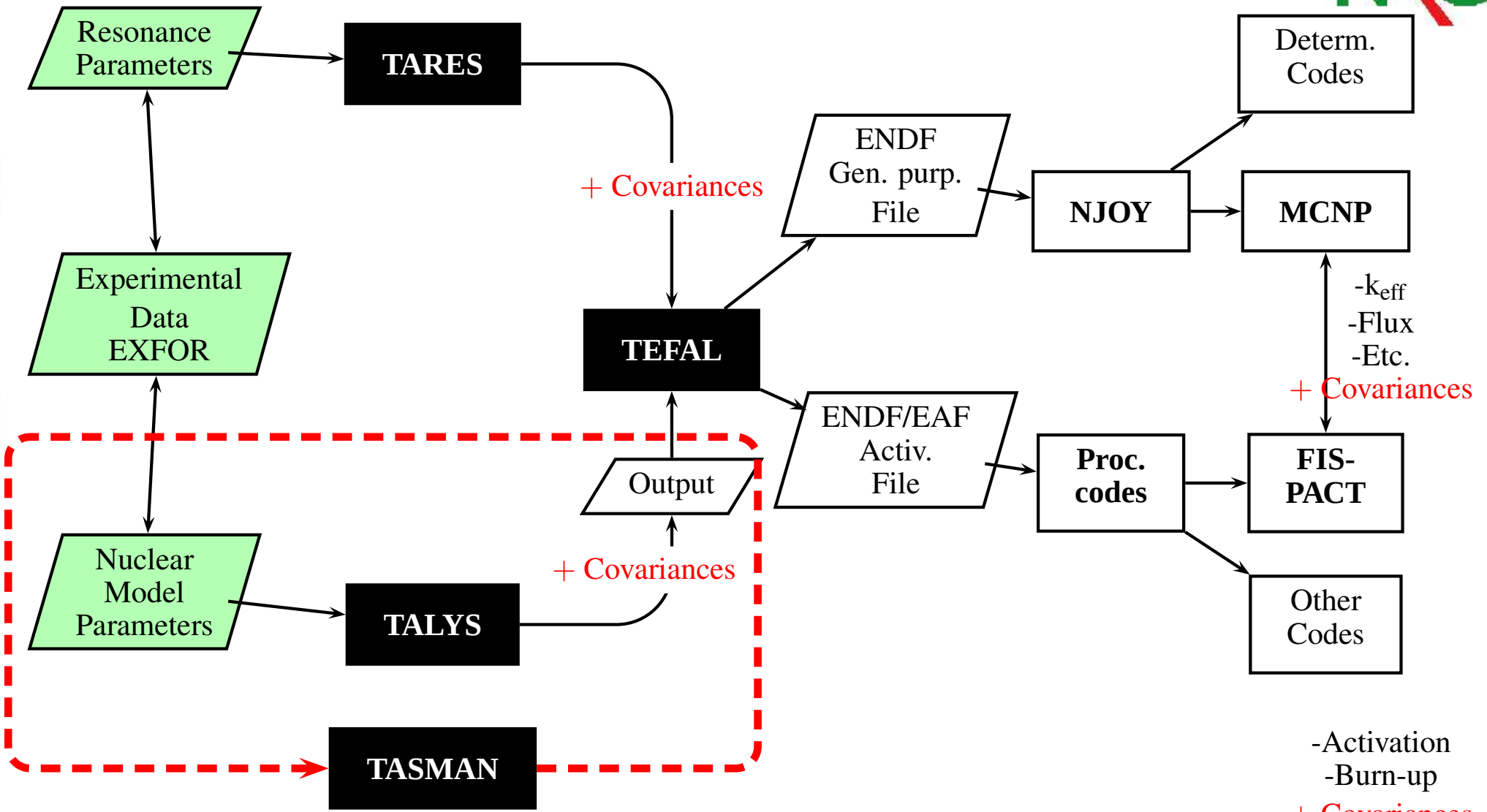
Concept: TALYS + Monte Carlo = TENDL-2009



Concept: Standard nuclear data scheme

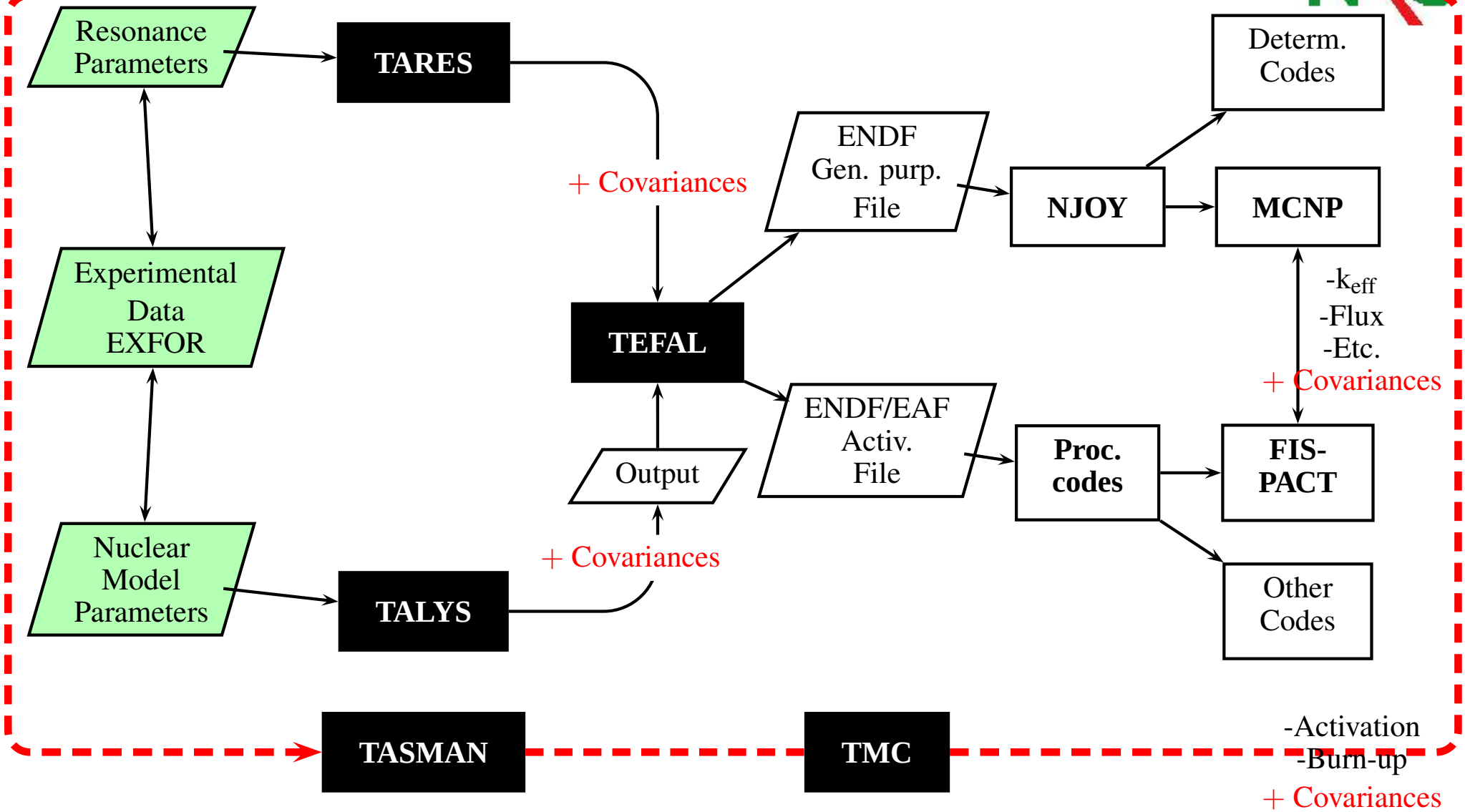


Concept: Nuclear Data Scheme with covariances



Monte Carlo: 1000 TALYS runs

Concept: Nuclear Data Scheme with Total Monte Carlo



Monte Carlo: 1000 runs of all codes

Is TENDL-2009 available ?

Not yet, but...

Is TENDL-2009 available ?

Not yet, but...

Here

Here

Here

www.talys.eu/tendl-2009beta

Here

Here

Here

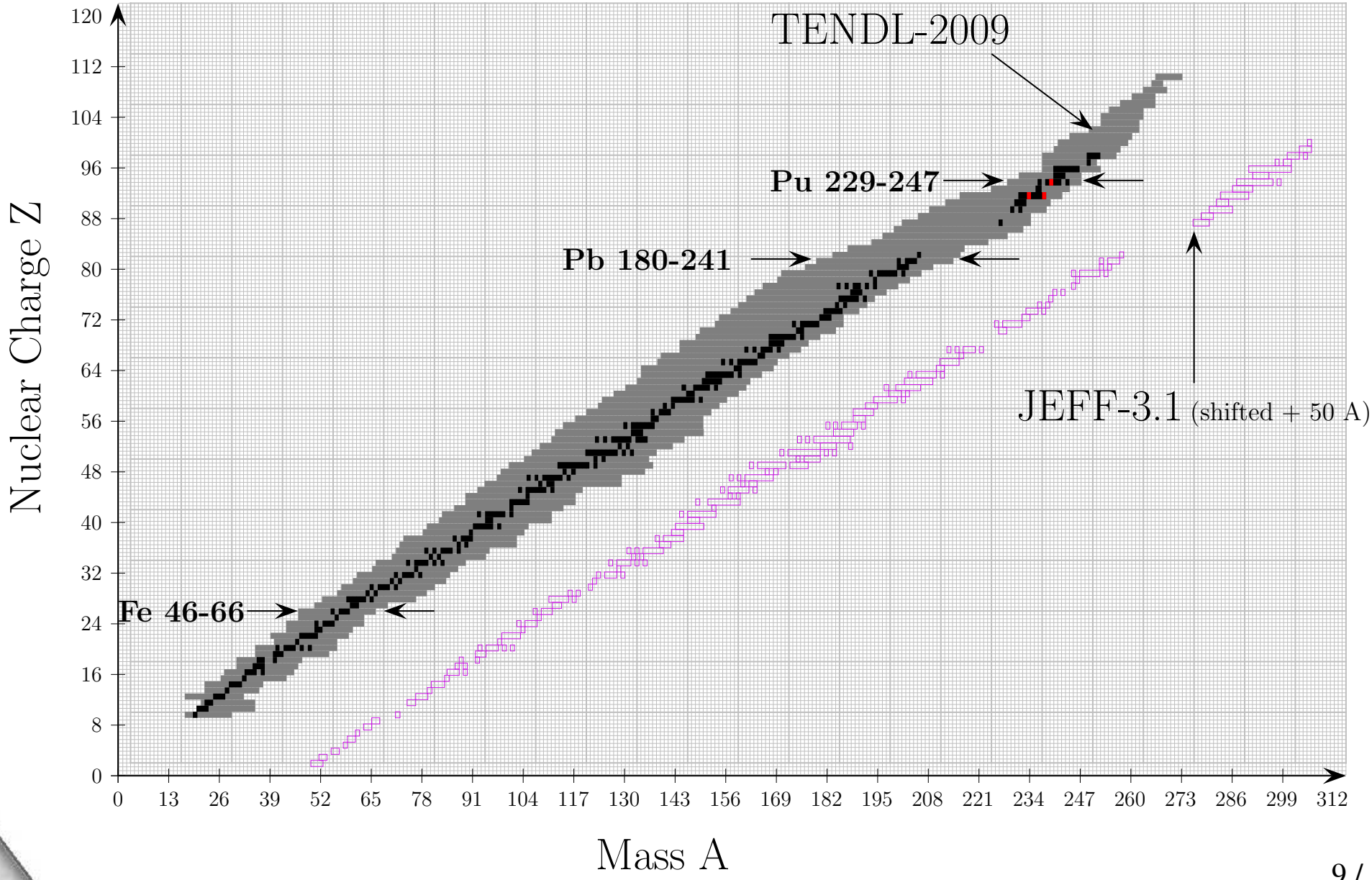
Content 1- TENDL-2009

- Neutrons: ENDF files, plots, ACE files
- Protons: ENDF files, ACE files
- Alphas: ENDF files, ACE files
- ...

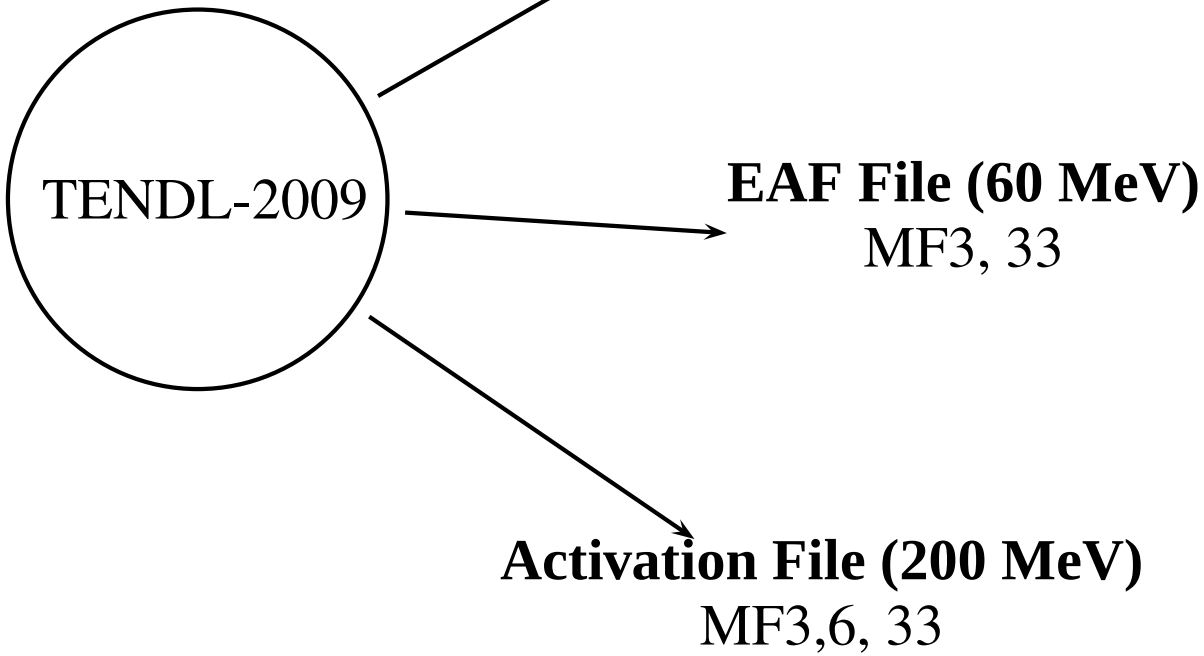
	Neutron	Proton	Deuteron	Triton	Alpha	Helium3	Photon
TENDL-2009	**>1000**	**>1000**	**>1000**	**>1000**	**>1000**	**>1000**	**>1000**
TENDL-2008	**348**	**344**	**336**	**339**	**342**	**338**	327
(JEFF-3.1)	*381*	*26*					
(ENDF/B-VII.0)	*393*	*48*	*5*	*3*			*163*

Content 2- TENDL-2009 Neutron library: ^{19}F to ^{281}Ds ($t_{1/2} > 1$ μsec)

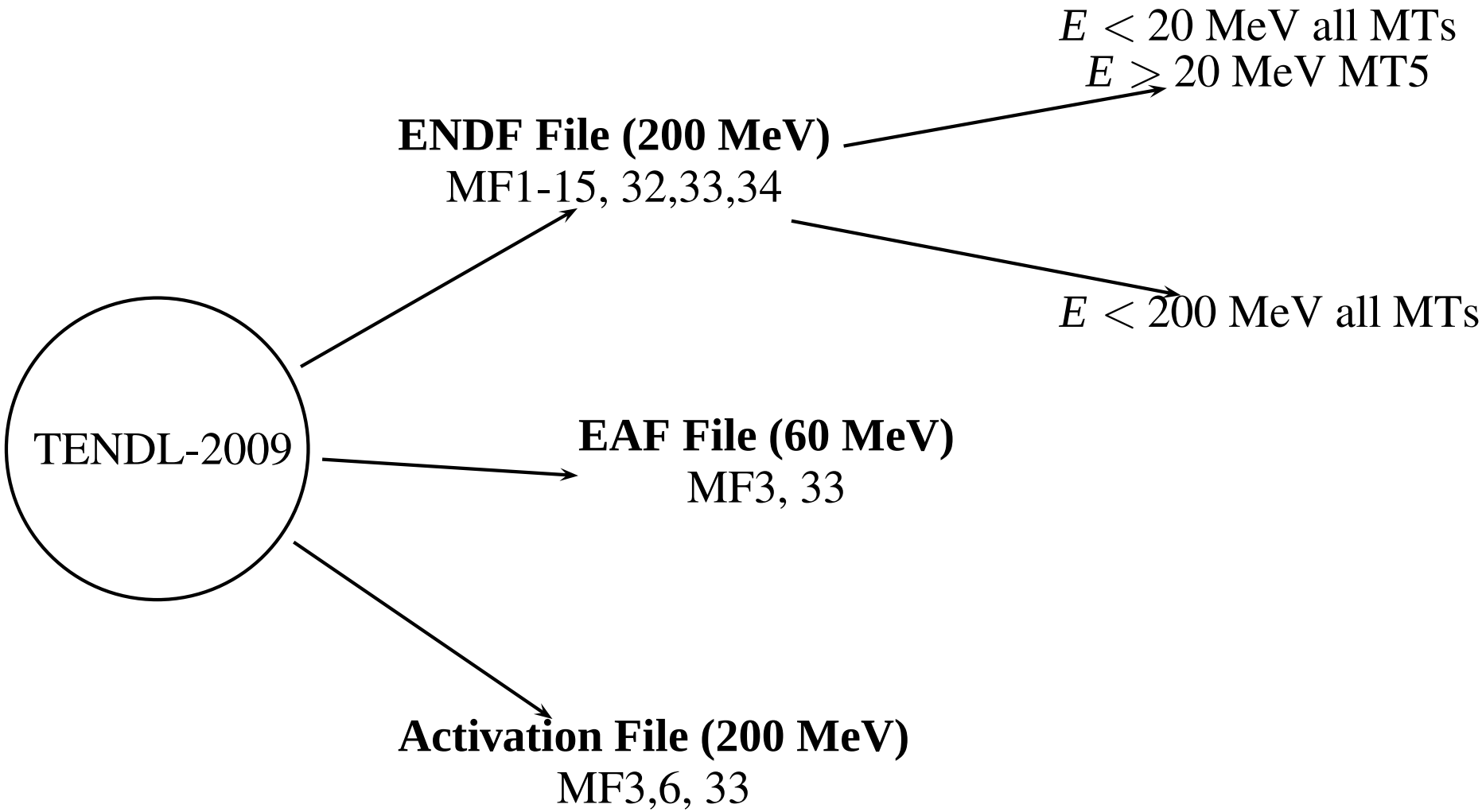
Default Calculations | Medium Quality | Better Quality



Content 3- TENDL-2009 Transport, Activation and EAF files



Content 3- TENDL-2009 Transport, Activation and EAF files



Content 4- TENDL-2009 Neutron library: from MF-1 to MF-34

Content of a typical file up to 200 MeV (out of $>$ 1000 files):

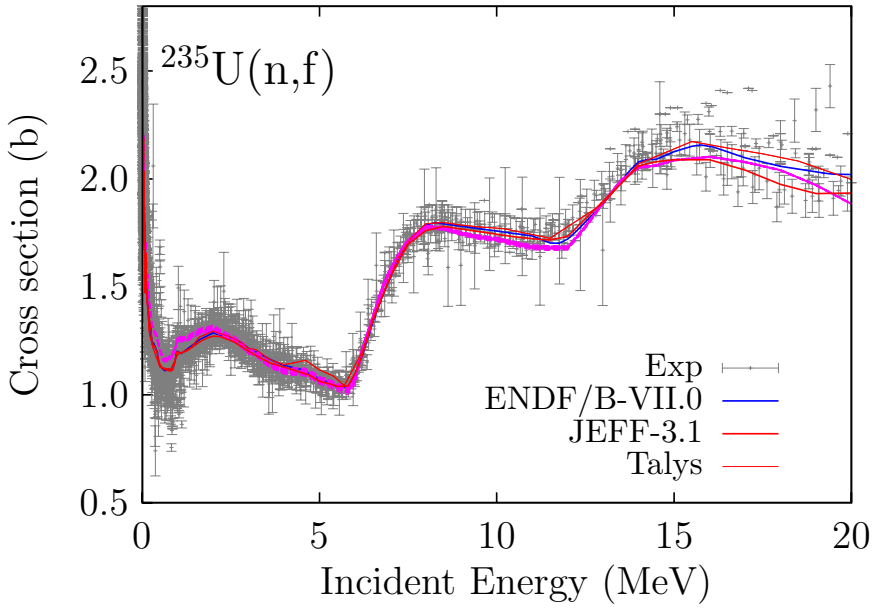
- MF-1: Description
- MF-2: Resonance parameters (Reich-Moore or Multi-level Breit Wigner)
- MF-3: Cross sections (n,tot), (n,el), (n,non), (n,inl$_i$), ..., (n,γ), (n,p$_i$), (n,α_i)
- MF-4: Elastic angular distribution (Legendre Polynomials)
- MF-6: Double differential distributions and spectra for (n,2n), ..., (n,α_i)
- MF- 8-10: Isomeric cross sections
- MF-32: Resonance parameter covariances
- MF-33: Cross section covariances (with cross correlation)
- MF-34: Elastic angular distribution covariances (up to the 6^{th} Legendre polynomial coefficient)

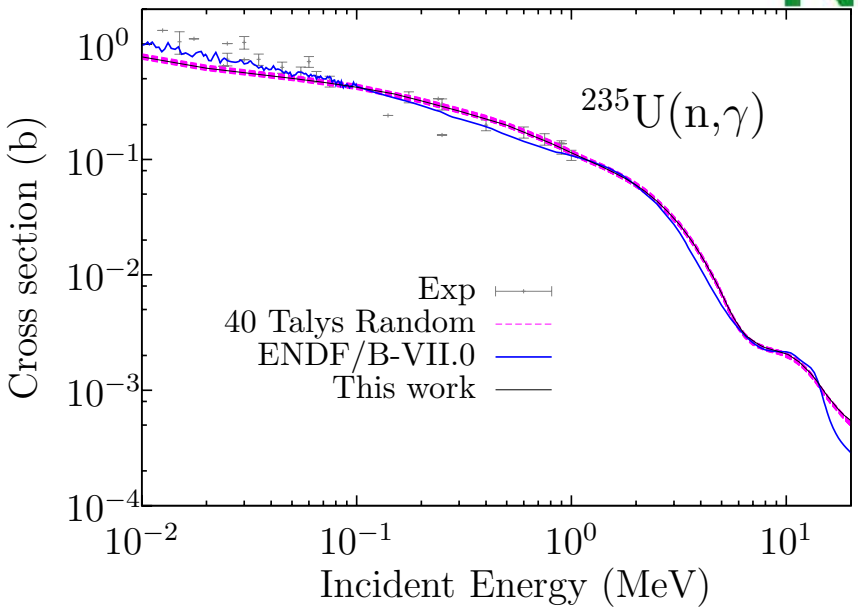
Content 5- TENDL-2009: Actinides

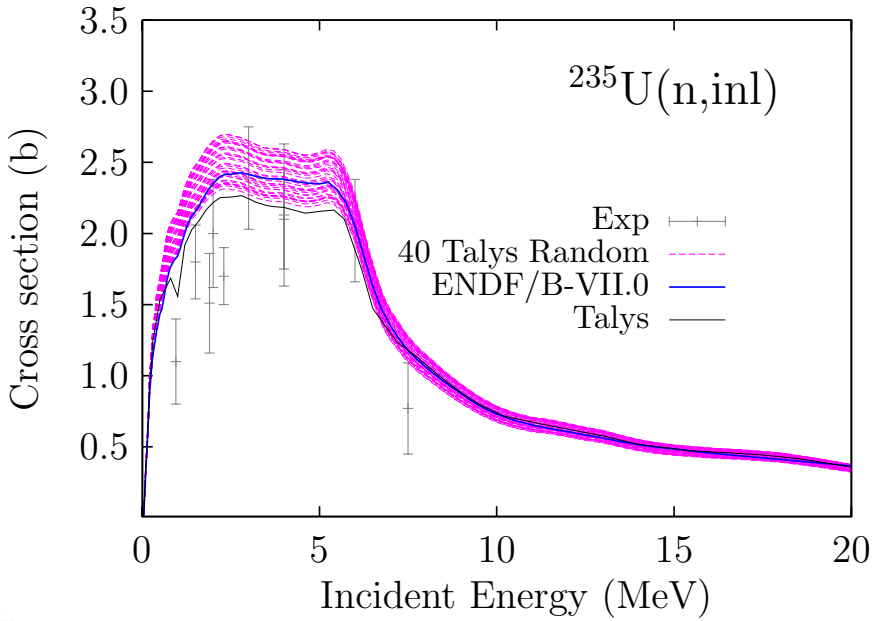
Element	Isotopes	Element	Isotopes
Th	208-227, 228-232, 233-239	Pa	213-230, 231,233, 234-239
U	222-232, 233-238, 239-242	Np	225-236, 237, 238-244
Pu	229-237, 238-244, 245-247	Am	232-238, 239-243, 245-247
Cm	238-242, 243-248, 249-252	Bk	238-248, 249, 250, 251
Cf	237-248, 249, 250-256	Es	241-253, 254, 255-257
Fm	242-257	Md	245-260
No...Ds			

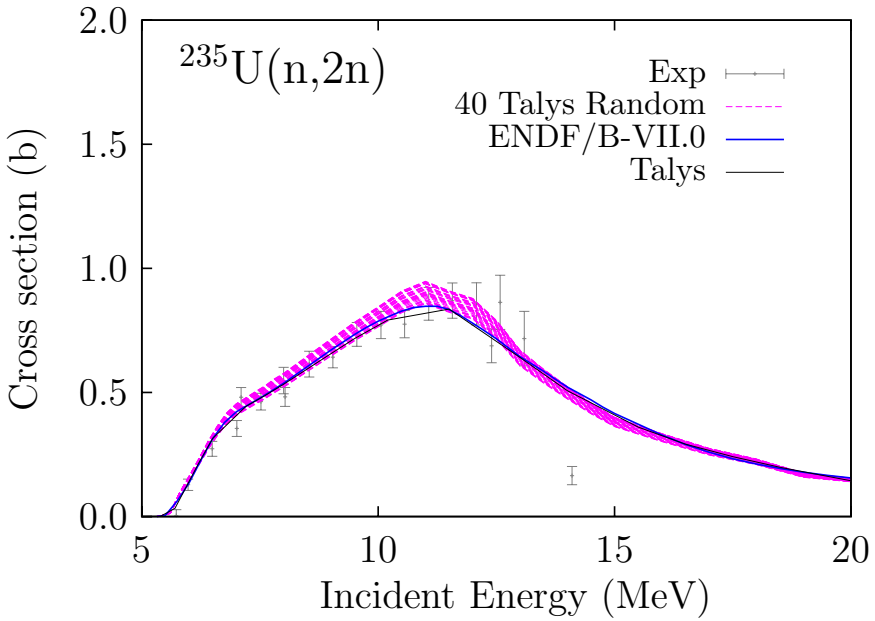
$\Longrightarrow$ 36 "medium" or "better" quality evaluations and 406 "default" quality evaluations (with isomers)

Examples 1: U-235

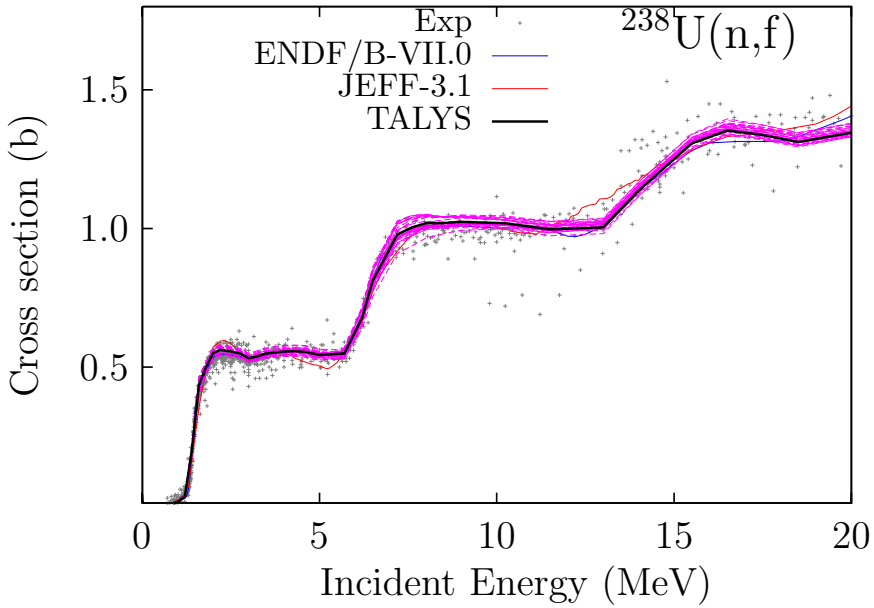


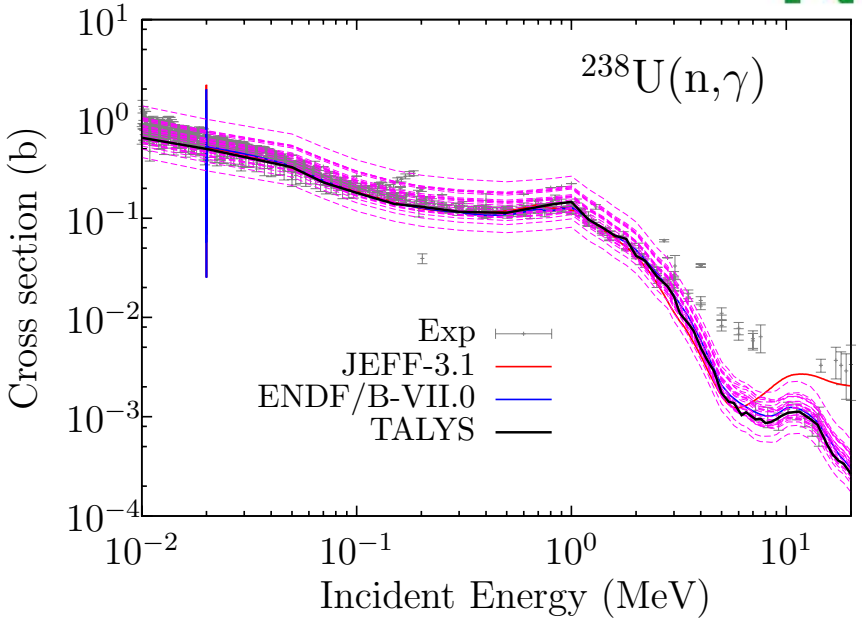


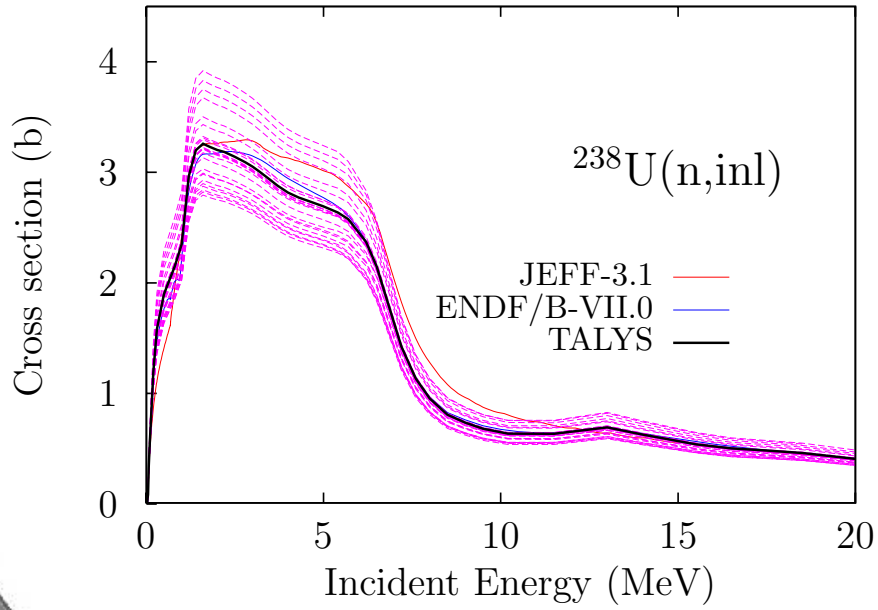


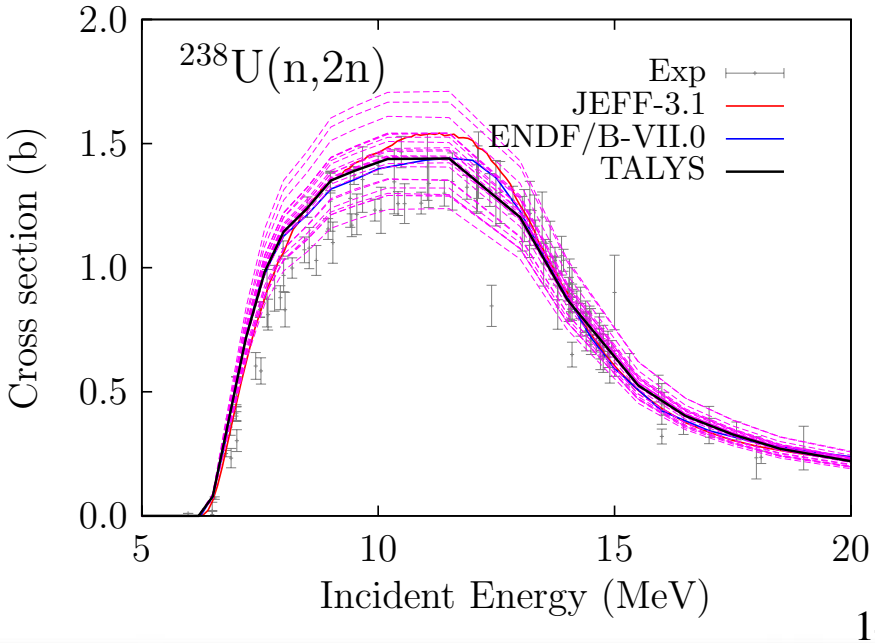


Examples 1: U-238

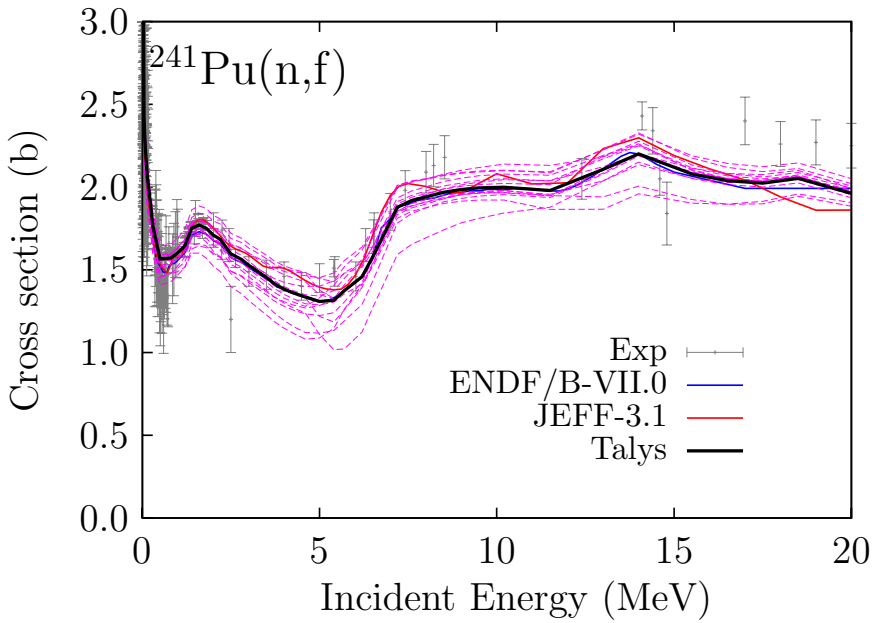


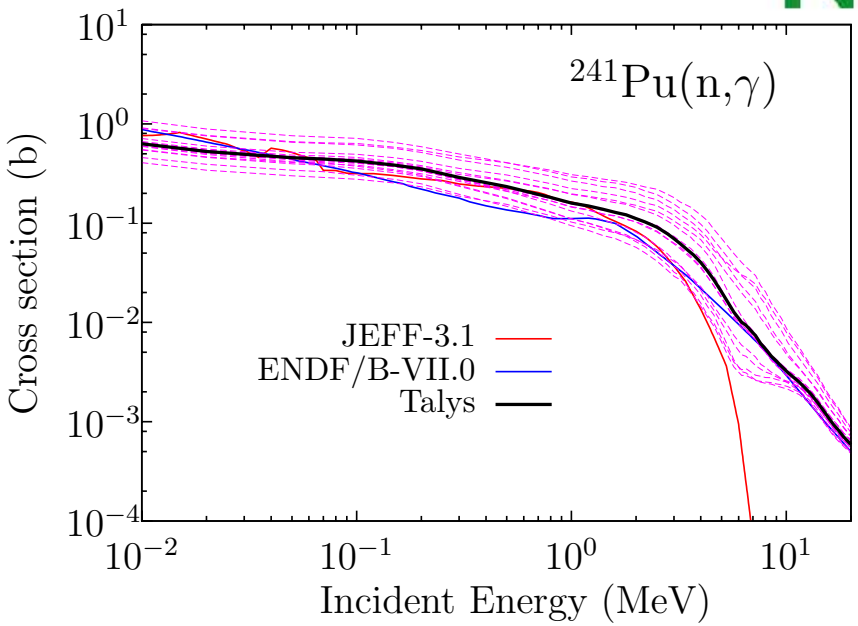


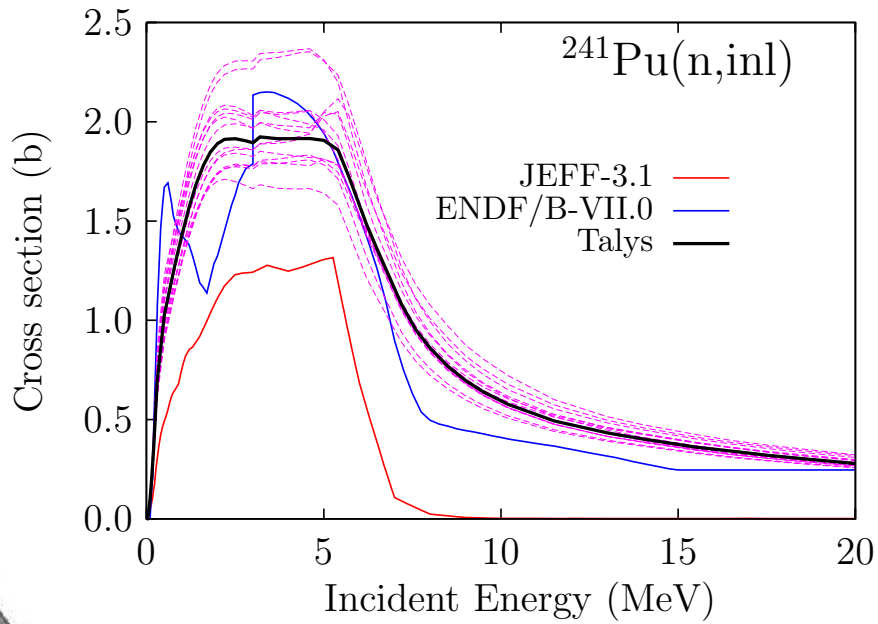


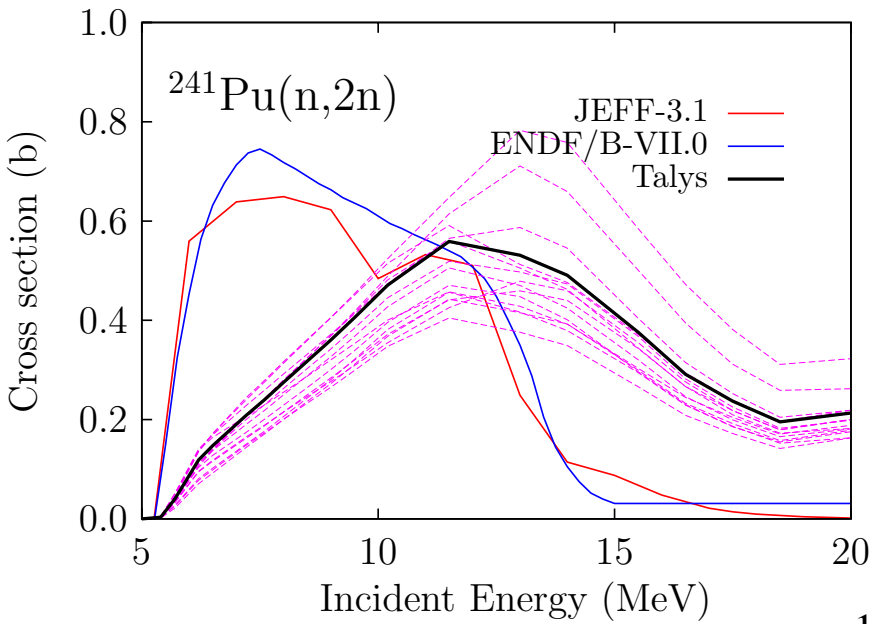


Examples 2: Pu-241

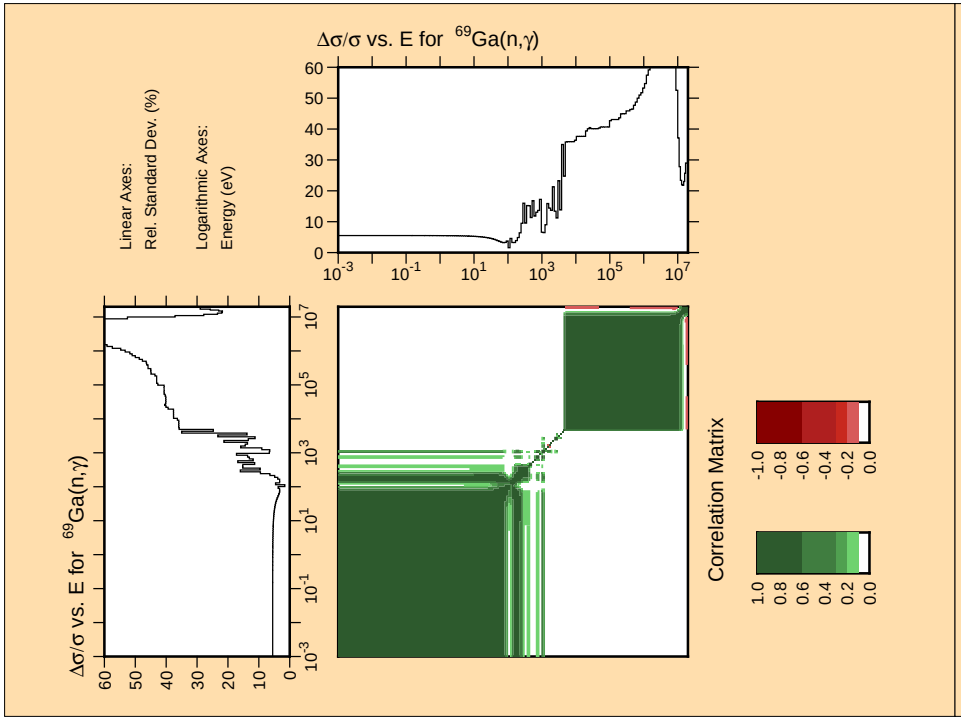


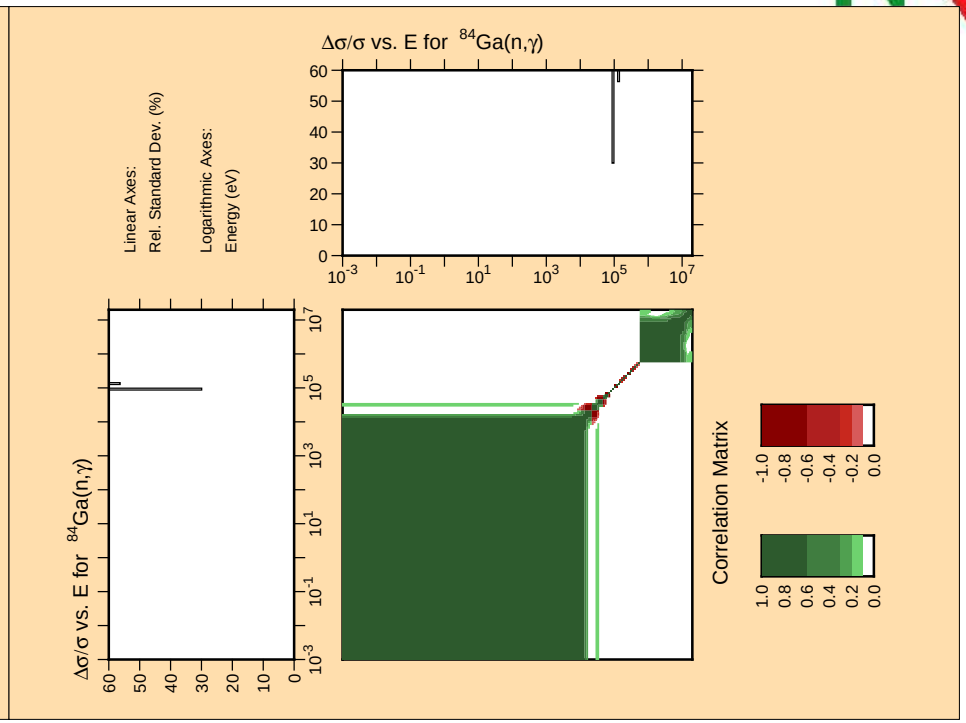




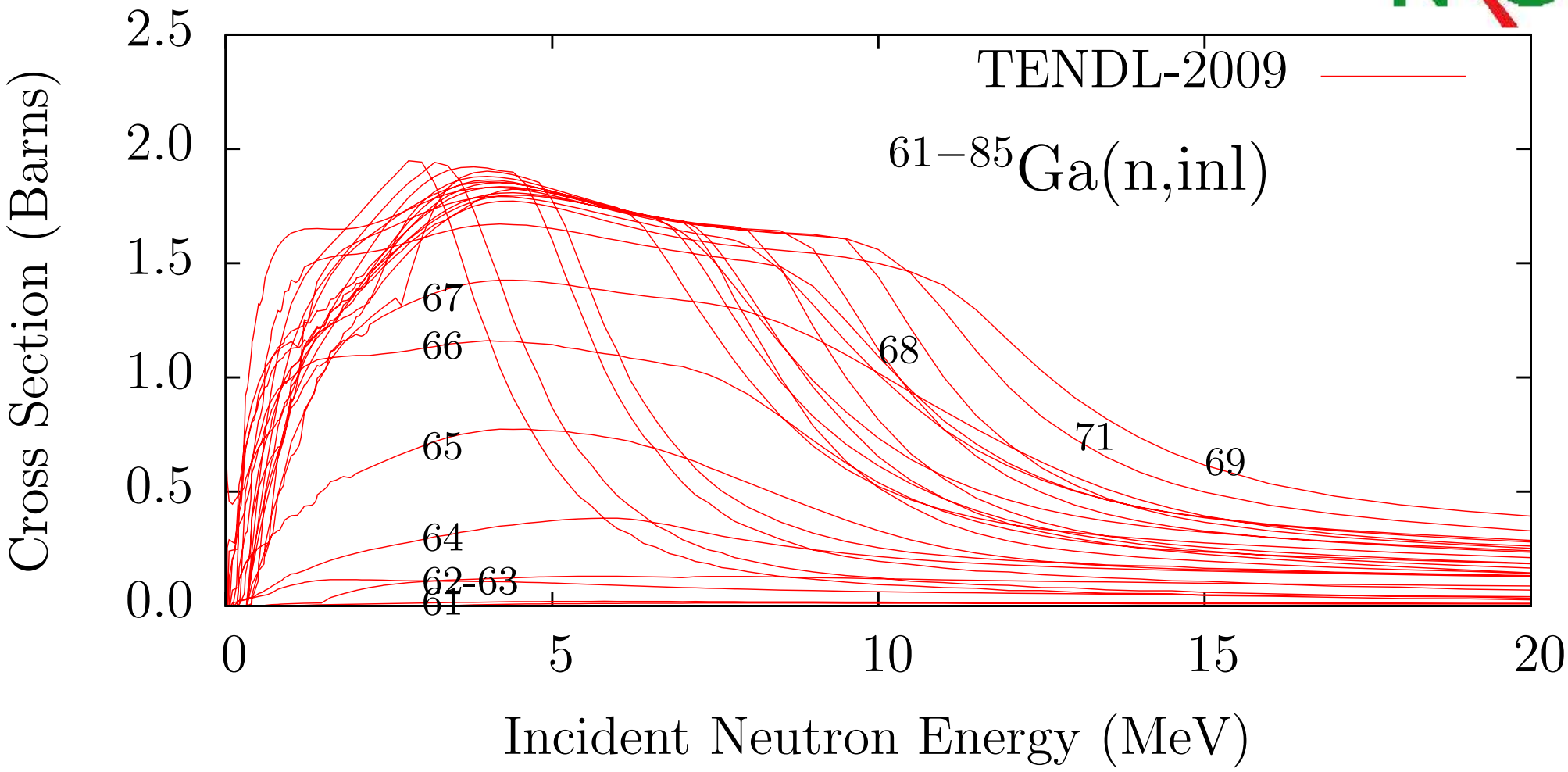


Examples 3: Ga-69 and Ga-84

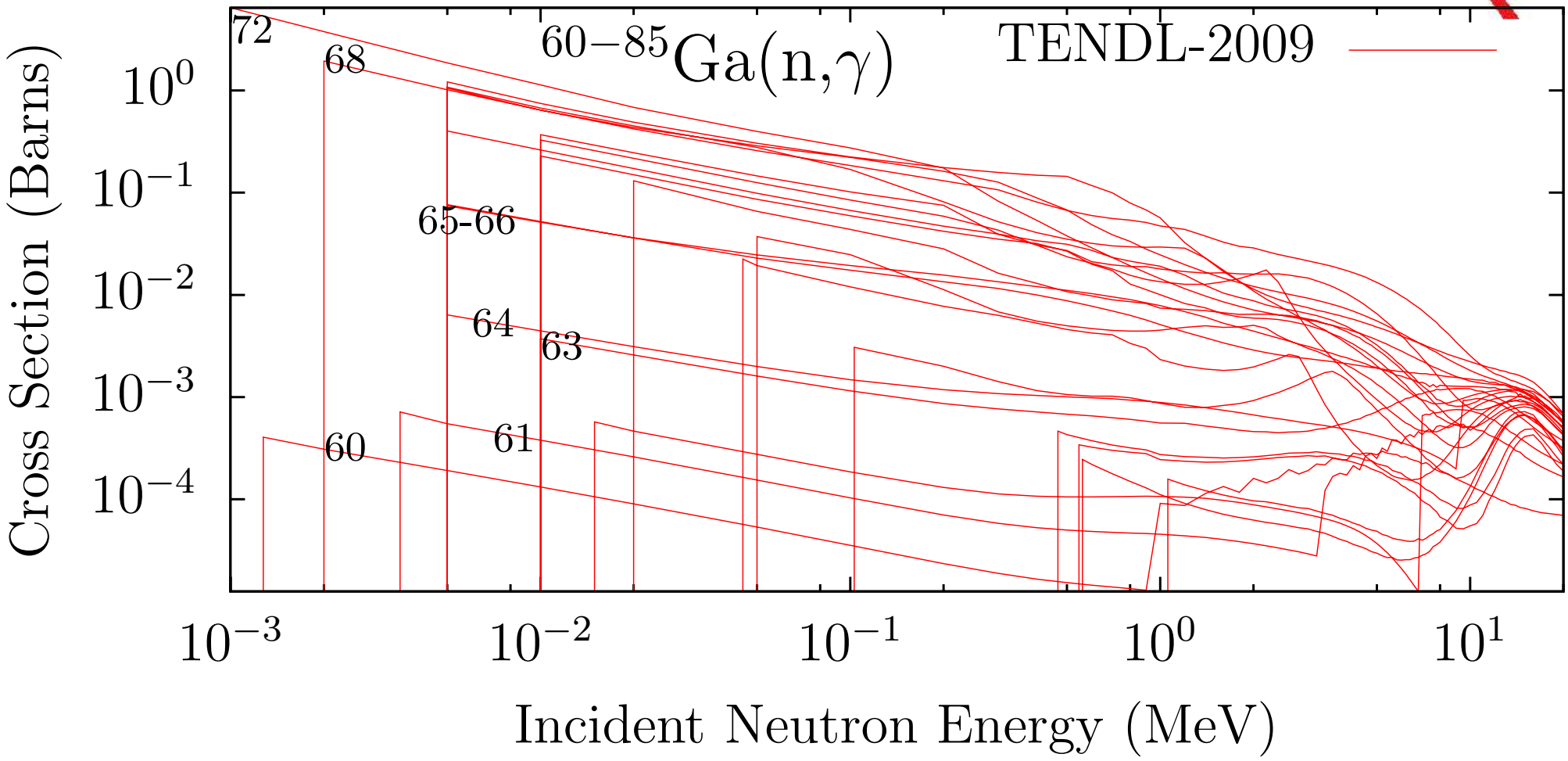




Examples 4: $^{61-85}$Ga(n,inl)



Examples 5: $^{60-85}$Ga(n,γ)



Conclusions and Future improvements

- - Consistent data files
- - Automatic updates
- - Extensive set of covariance files
- - Reproducible with TALYS-1.2 (released with the library and reference papers)
- - Best TALYS and resonance parameters fitting

Release date: End of 2009 !

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- - More adjustment to experimental data
- - More extensive validation
- - Addition of original URR