



^{239}Pu Evaluation Status

Patrick Talou

Los Alamos - May 4, 2017

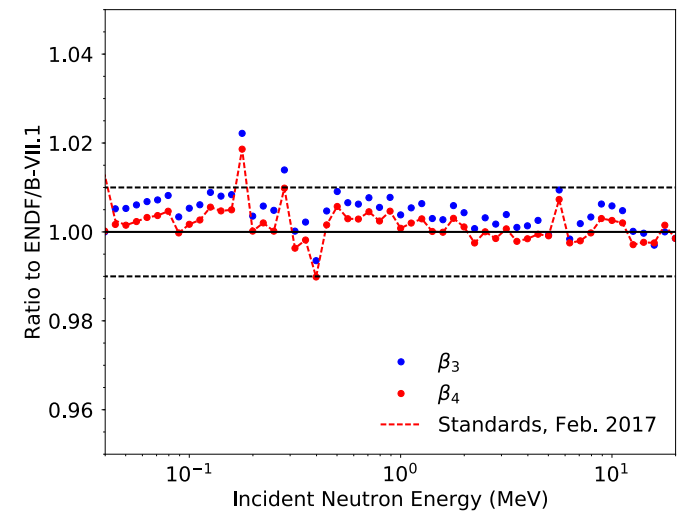
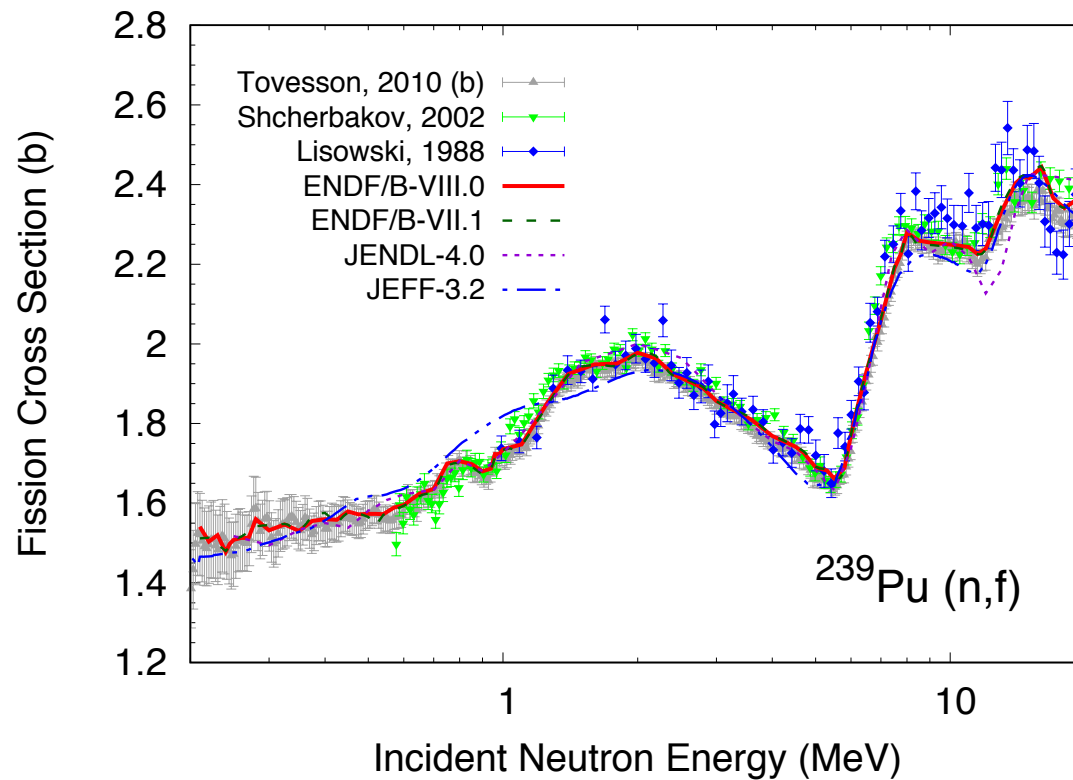
UNCLASSIFIED

Operated by Los Alamos National Security, LLC for the U.S. Department of Energy's NNSA



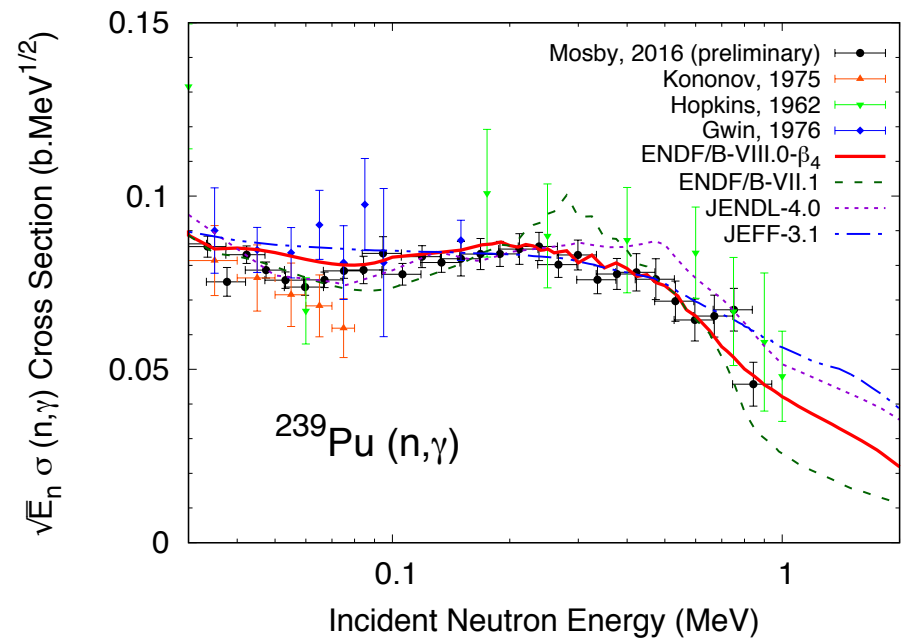
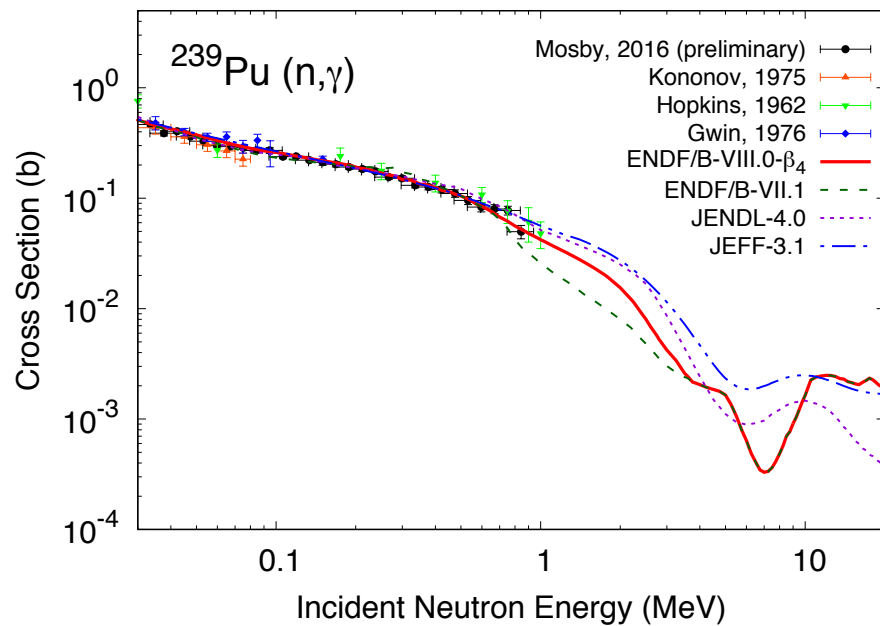
Reaction	B-VII.1	B-VIII.0 β_3	B-VIII.0 β_4
(n,f)	Standards 2009	Prelim. GMA standard values (Oct. 31, 2016)	Final GMA standard values (Feb. 15, 2017)
(n, γ)	From B-VI	Adjusted to Mosby data + Kawano's calculations	= β_3
(n,xn)	GNASH+LANSCE/GEANIE	B-VII.1	Changes near 6.5-8 MeV
PFNS	Madland, 2001	half "Romano tweak" at thermal, B-VII.1 below 5 MeV	Neudecker above 5 MeV (no Chi-Nu data yet)
$\langle v \rangle$	GLUCS + tweak in fast energy range to fit Jezebel	"Untweaked" in fast energy range	Slight adjustments above ~1 MeV to recover criticality benchmarks
P(v)	-	-	(not yet included, but ready)
γ production	Yes, but transition at 1.09 MeV; lumped spectra above	-	All channels, including fission added
Fission Energy Release	Madland, 2006	B-VII.1	B-VII.1
Covariances	Yes for most channels; no link between low- and high-energy regions	none	(not yet)

Fission Cross Section



UNCLASSIFIED

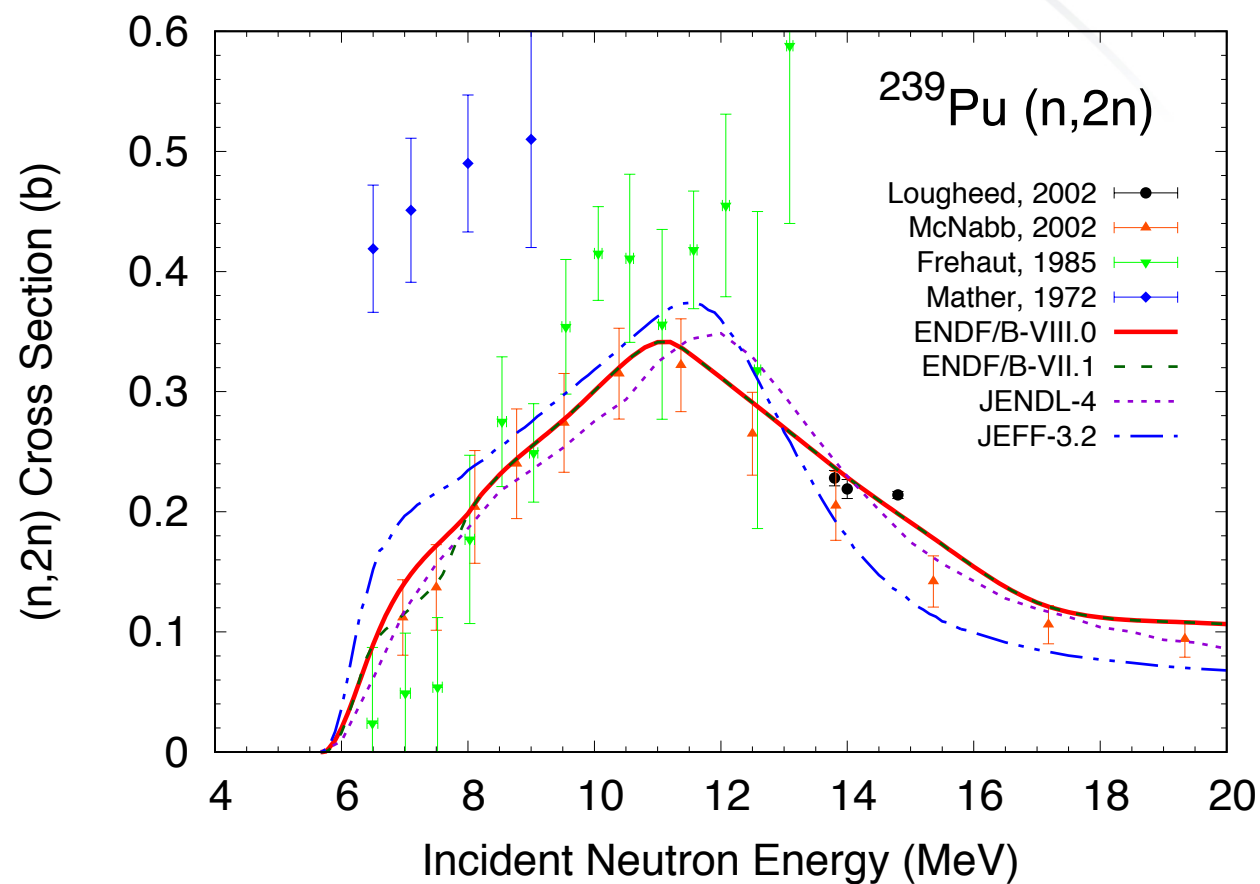
Capture Cross Section



UNCLASSIFIED

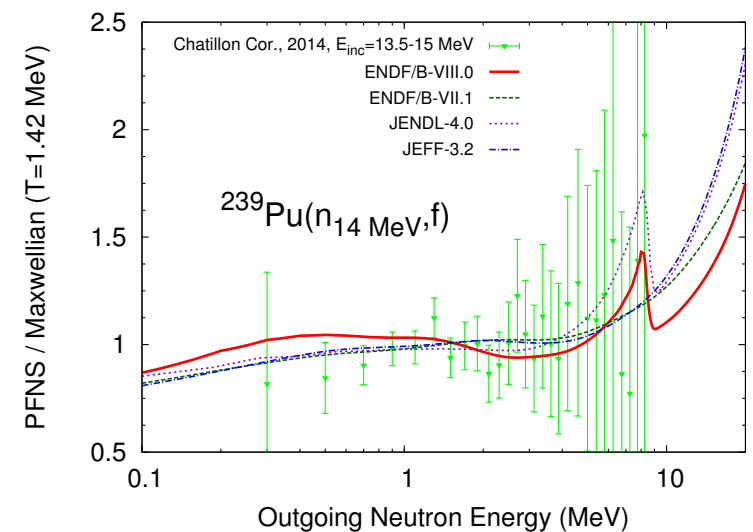
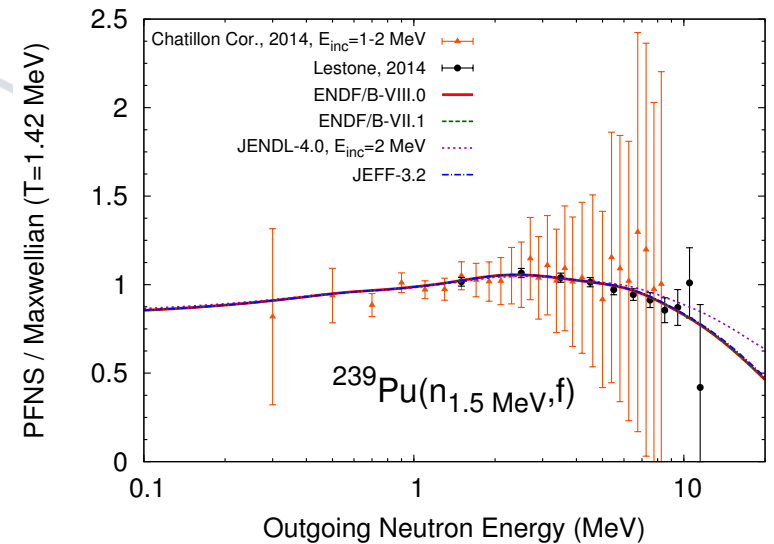
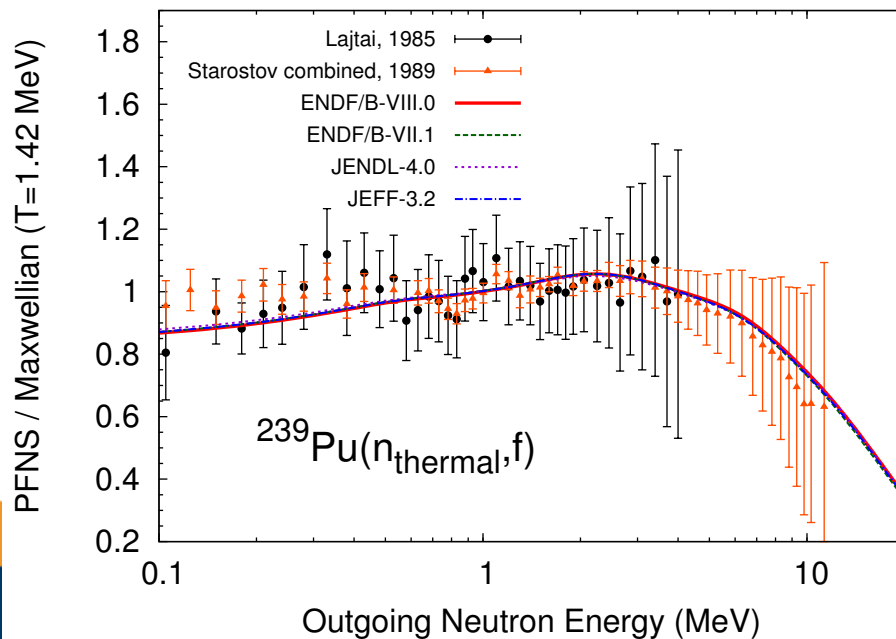
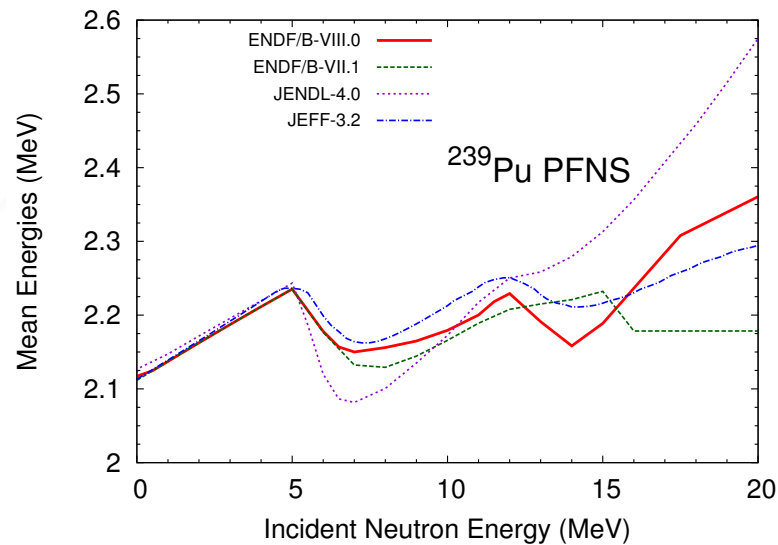
(n,2n) Cross Sections

- Changes between 6.5 and 8 MeV



UNCLASSIFIED

PFNS



D

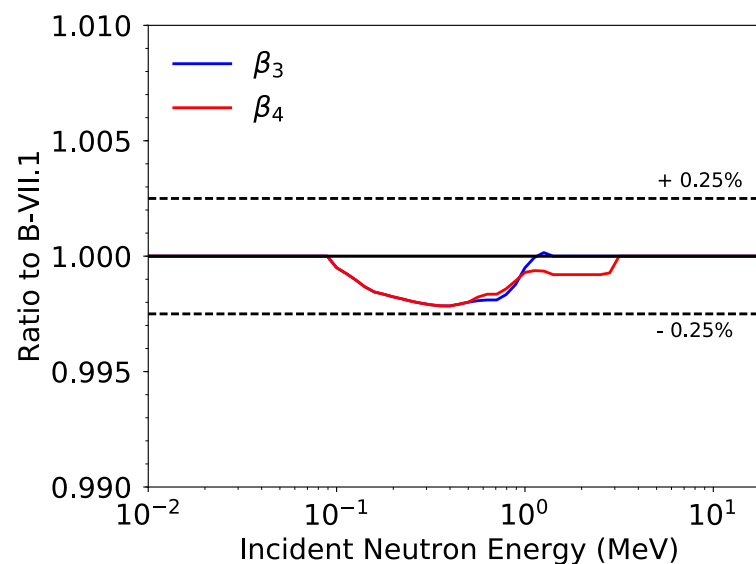
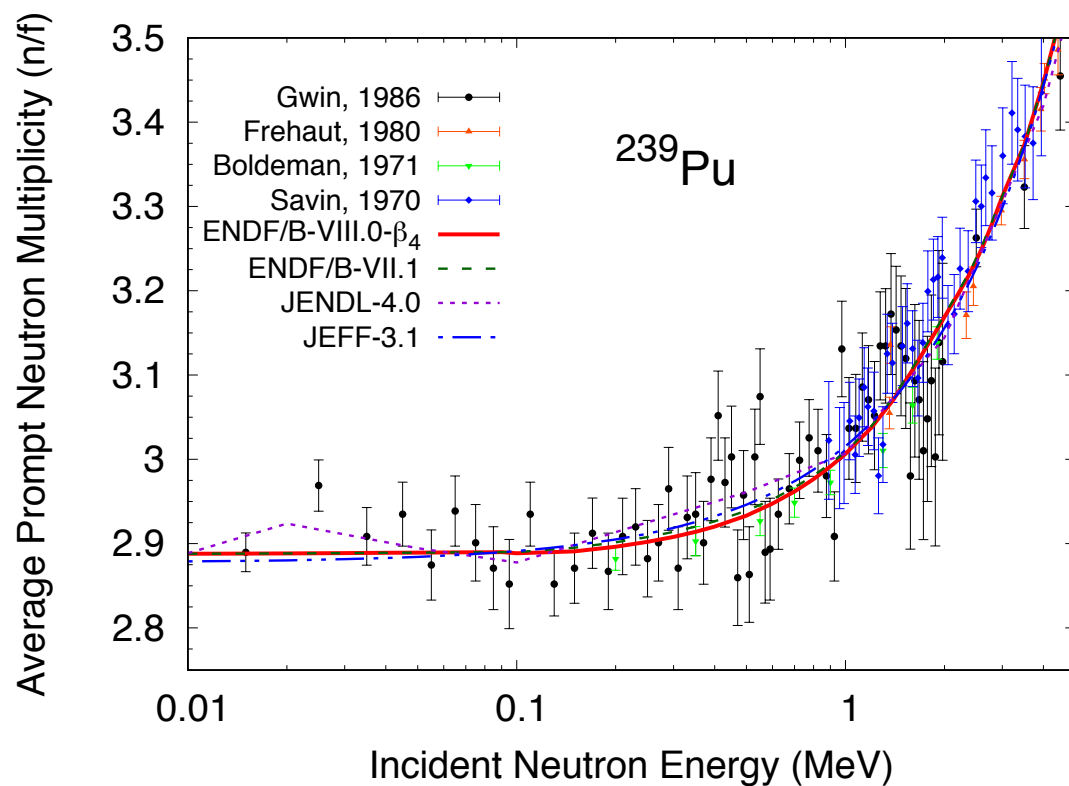
(plots by D. Neudecker)

U.S. Department of Energy's NNSA



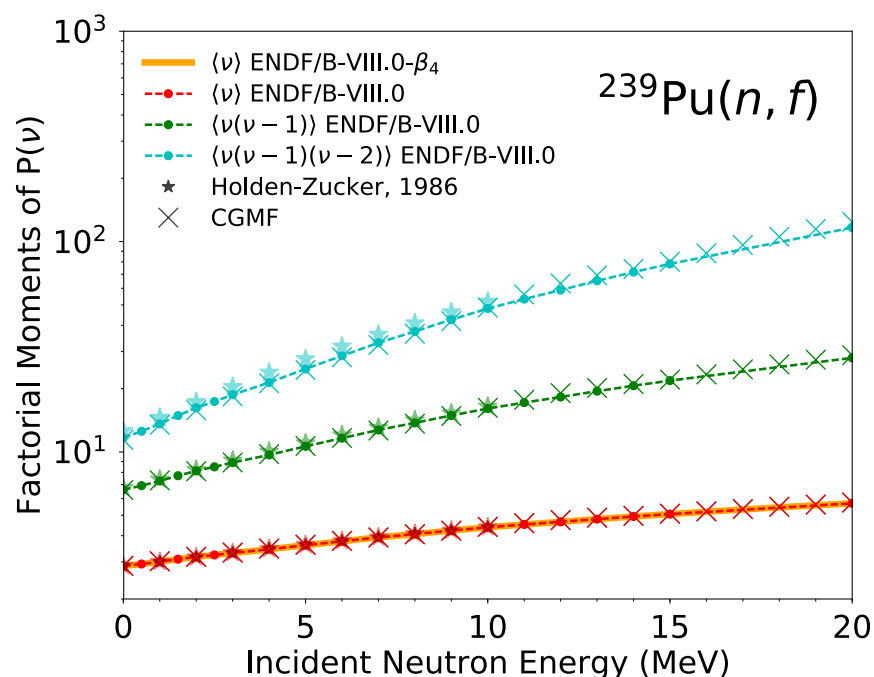
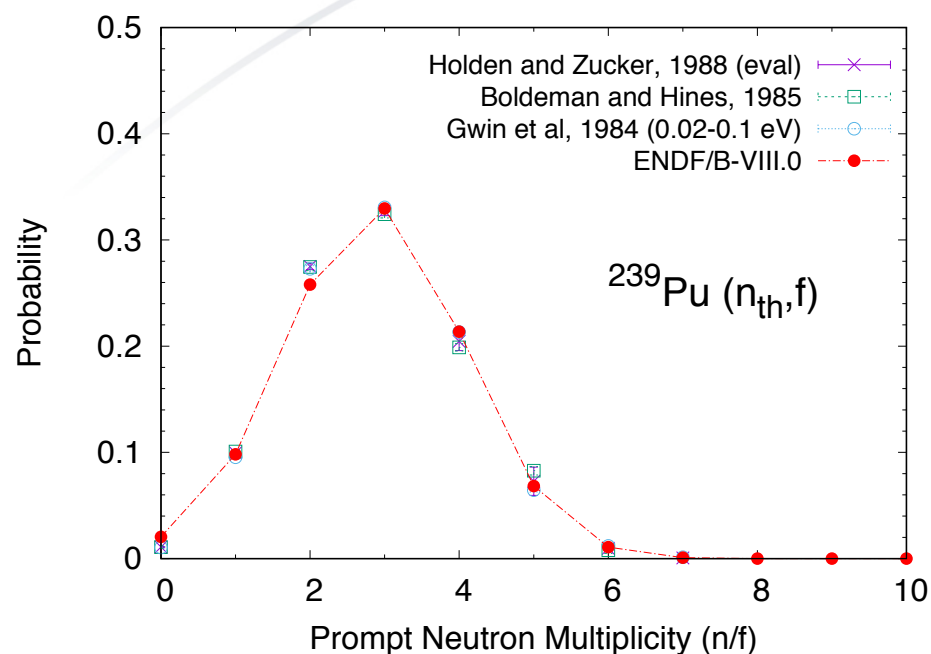
Slide 6

Prompt Neutron Multiplicity



UNCLASSIFIED

$P(\nu)$ and ν -dependent PFNS

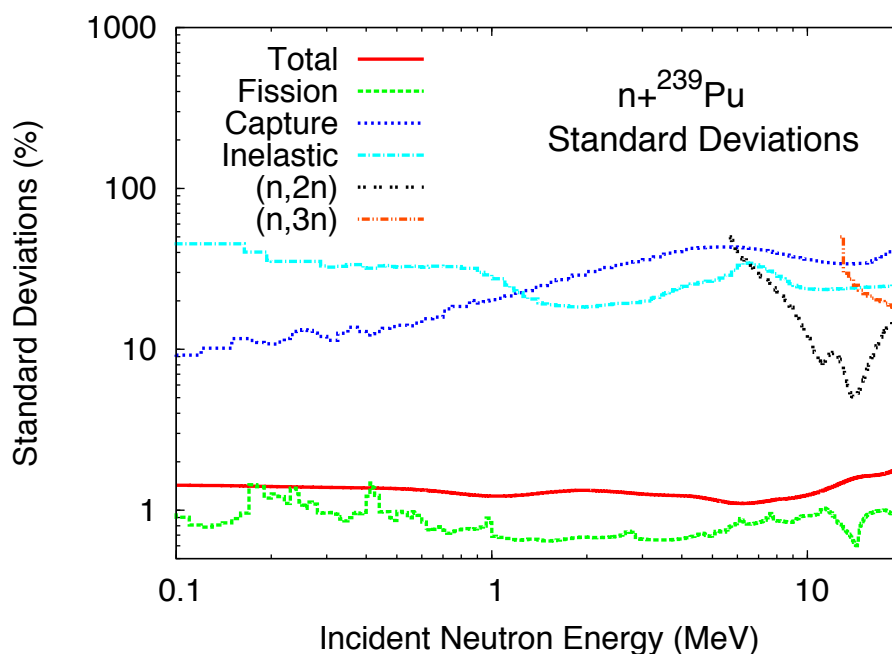
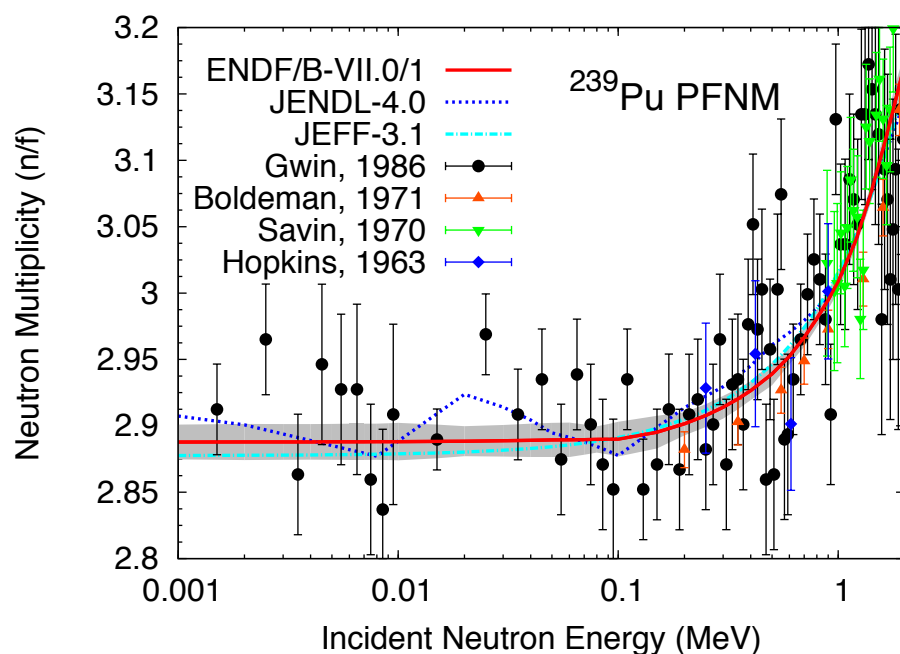


- Not in ENDF file yet
- New format, but not really tested yet
- No ν -dependent PFNS included yet

UNCLASSIFIED

Covariances

- Now reviewing ENDF/B-VII.1 covariances for:
 - (n,f), (n, γ), (n,n'), (n,2n), PFNS and $\langle v \rangle$
- Ongoing effort to propagate uncertainties from “estimated” covariances under “realistic, conservative and extreme” assumptions



UNCLASSIFIED

- That's all... for now.

UNCLASSIFIED