



New PFNS and/ or nu-bar evaluations for $^{232-238}\text{U}$ and $^{240-242}\text{Pu}$

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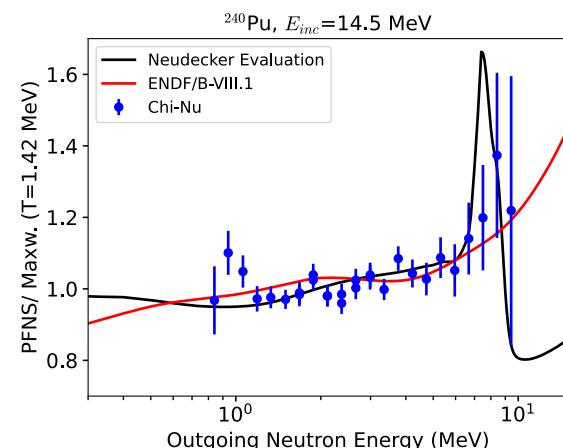
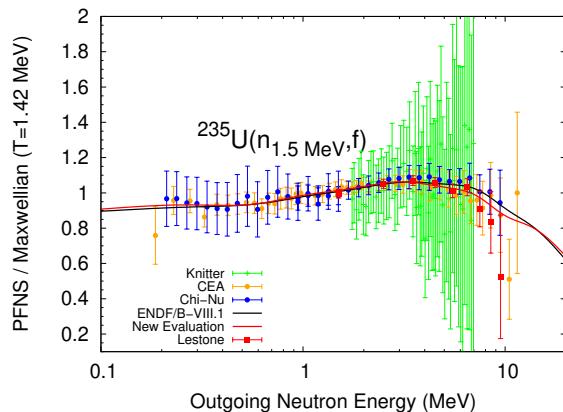
New $^{233,235,238}\text{U}$ and ^{240}Pu PFNS evaluation leverage new CEA/ Chi-Nu experiments, improve theory & give better cov.

Current evaluation deficiencies

- New diff. exp: New Chi-Nu ^{238}U PFNS, CEA ^{235}U PFNS hint at softer PFNS, ^{240}Pu PFNS from Chi-Nu are the first ever reasonable data!
- New integral exp: PFUNS RRR in the Planet critical assembly will inform the high- E_{out} tail for ^{235}U .
- New modeling: pre-equilibrium missing in VIII1 ^{233}U , ^{240}Pu PFNS, ..
- Impact: A. Trkov highlighted at ND2025 that new ^{233}U PFNS could help with issues in ^{233}U crits; new ^{235}U PFNS drops mean energy by 10 keV; ^{240}Pu PFNS increases Dirty Jezebel k_{eff} by 41 pcm.

Time frame

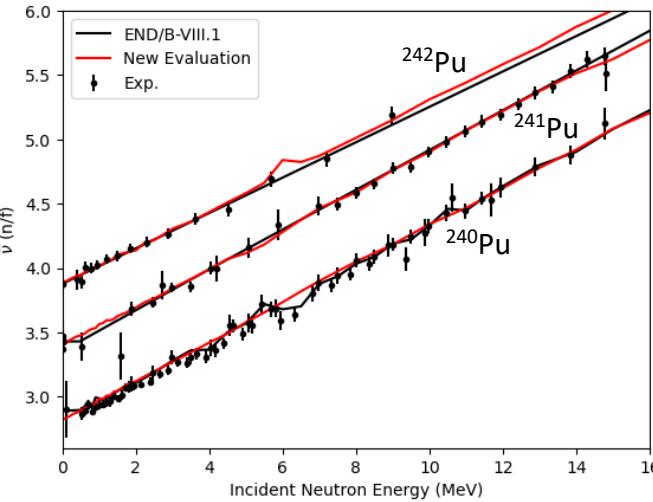
- Cross-collaborations: CEA, Chi-Nu, INDEN, PFUNS.
- ^{238}U released to beta1, ^{235}U and ^{240}Pu PFNS can be released.
- ^{233}U PFNS Chi-Nu data needs to be measured, then +1 year for evaluation.



New minor U and Pu isotope nu-bar evaluations factor in detailed experimental UQ and consistent theory.

Current evaluation deficiencies

- Scope: Re-evaluation of $^{240-242}\text{Pu}$ and $^{232-238}\text{U}$ nu-bars.
- Issues in VIII.1: sparse grid, unexpected structures (^{240}Pu , $^{233,237}\text{U}$)
- Diff. exp: CEA ^{240}Pu and $^{235,238}\text{U}$ nu-bars will come, discrepancies in historical data should be studied with ML and detailed exp. UQ.
- New integral exp: High Pu-240 Jupiter benchmark.
- New modeling: consistent CGMF modeling to cover many isotopes.
- Impact: Dirty Jezebel k_{eff} rises by up to 25 pcm.



Time frame

- Cross-collaborations: CEA, INDEN, ORNL.
- $^{240-242}\text{Pu}$ can be released. Might update with CEA nu-bar.
- $^{233-238}\text{U}$ nu-bar depend on CEA release schedule; the earliest fall CSEWG 2026.



Assembly	PMF001v2s	PMF002
VIII.1	0.99936(7)	1.00075(8)
$+^{240}\text{Pu}$ nu-bar	0.99944 (7)	1.00093(7)
$+^{241}\text{Pu}$ nu-bar	0.99937 (8)	1.00100(8)
$+^{242}\text{Pu}$ nu-bar	-	1.00076(8)

Thank you for your attention!



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