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# Benchmarking JEFF-3.3T2 and T2+ with some criticality-safety cases

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- Source of the criticality-safety benchmarks
- Results JEFF-3.3T2, T2+ , T1 and JEFF-3.2
- Conclusions

*(T2+ = T2 with new  $^{16}\text{O}$ ,  $^{238}\text{U}$ , and H in  $\text{H}_2\text{O}$  thermal data)*

- A sub-selection of 297 benchmarks
- Based on MCNP inputs from S. van der Marck (NDS 113 (2012) 2935) and PSI inputs
- ACE files from the NEA
- MCNP6
- 74 Fast, 15 intermediate, 208 thermal
- 89 HEU, 75 LEU, 48 MIX, 60 PU, 17 INTER, 8 U233
- 36 hmf, 5 hmi, 43 hst, 23 lst, 5 mit, 4 mmf, 35 pst, 48 lct, 34 mct, 24 pmf, 1 pmi, 3 ict, 10 imf, 5 hci, 8 ust, 4 ici, 4 lmt, 5 mst

# Results in terms of reduced $\chi^2$

Type	JEFF-3.3T2	JEFF-3.3T2+	JEFF-3.3T1	JEFF3.2
<b>297 All</b>	<b>4.4</b>	<b>4.0</b>	<b>4.7</b>	<b>6.1</b>
74 Fast	8.0	7.7	7.4	10.1
15 Intermediate	13.1	12.8	19.3	36.9
208 Thermal	2.5	2.1	2.6	2.4
89 HEU	6.9	7.0	7.8	12.0
75 LEU	1.1	1.4	1.2	1.1
48 MIX	4.8	3.8	5.1	4.6
60 PU	4.7	3.6	4.2	4.3
17 INTER	3.8	3.6	3.9	7.2
8 U233	4.1	2.2	5.1	6.0



# Conclusion

- Based on these 297 criticality benchmarks, JEFF-3.2 performs better than JEFF-3.3T1
- Based on these 297 criticality benchmarks, JEFF-3.3T2 performs better than JEFF-3.2T1
- Based on these 297 criticality benchmarks, JEFF-3.3T2+ performs better than JEFF-3.2T2
- This is only part of the benchmarking (see other results)