

ENDF libraries data testing

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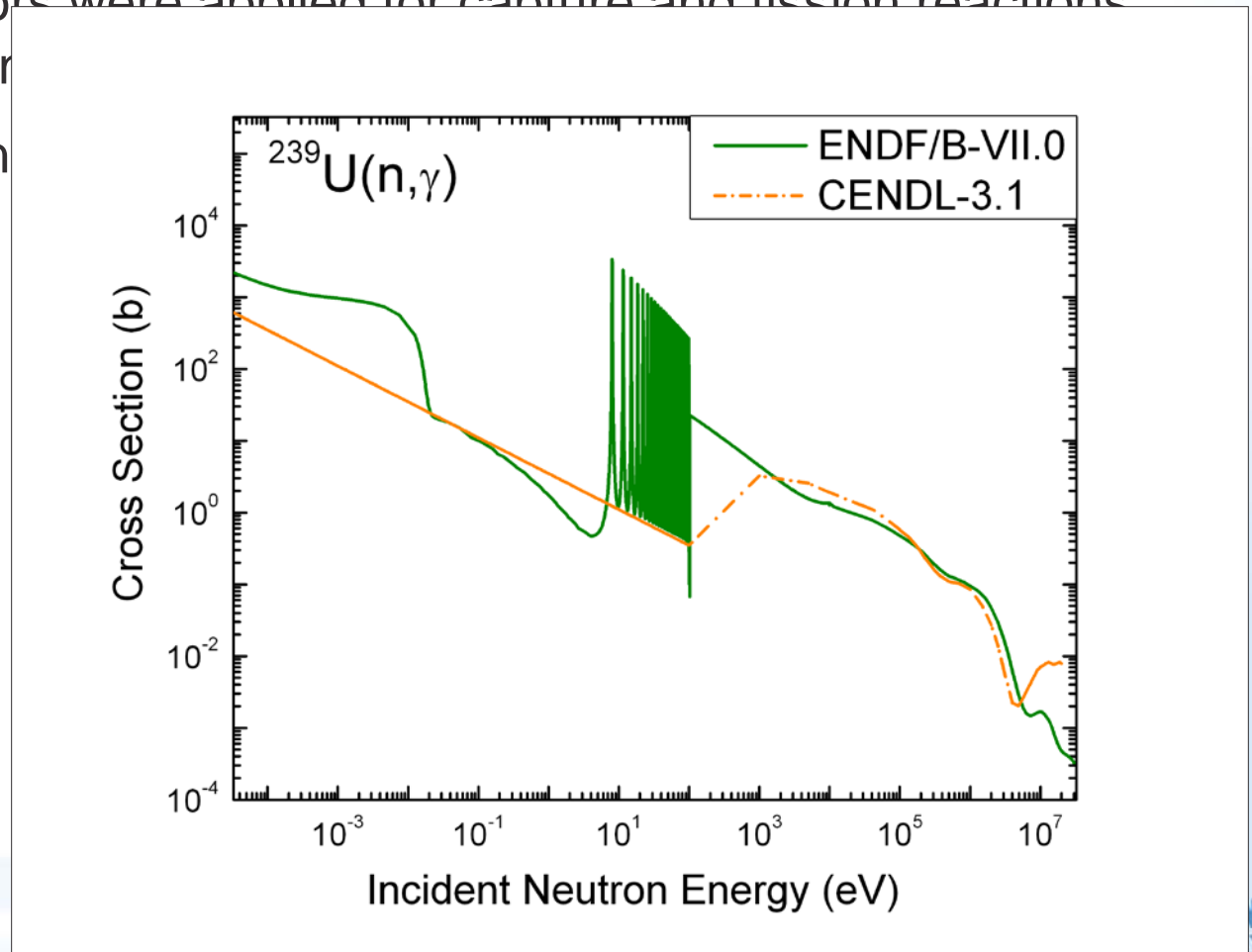
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Introduction

- Complete approach:
 - Five evaluated libraries: JENDL-4.0, CENDL-3.1, ROSFOND 2010, ENDF/B-VII.0 and JEFF-3.1
 - 715 materials in total
 - Several integral quantities: RI, Thermal and Maxwellian cross sections, Westcott factors
 - Multiple processing temperatures: 0 - 800 K
 - Comparisons with Atlas of Neutron Resonances, Neutron cross section standards, KaDONiS, ...
 - Low-Fidelity uncertainties for nuclear astrophysics

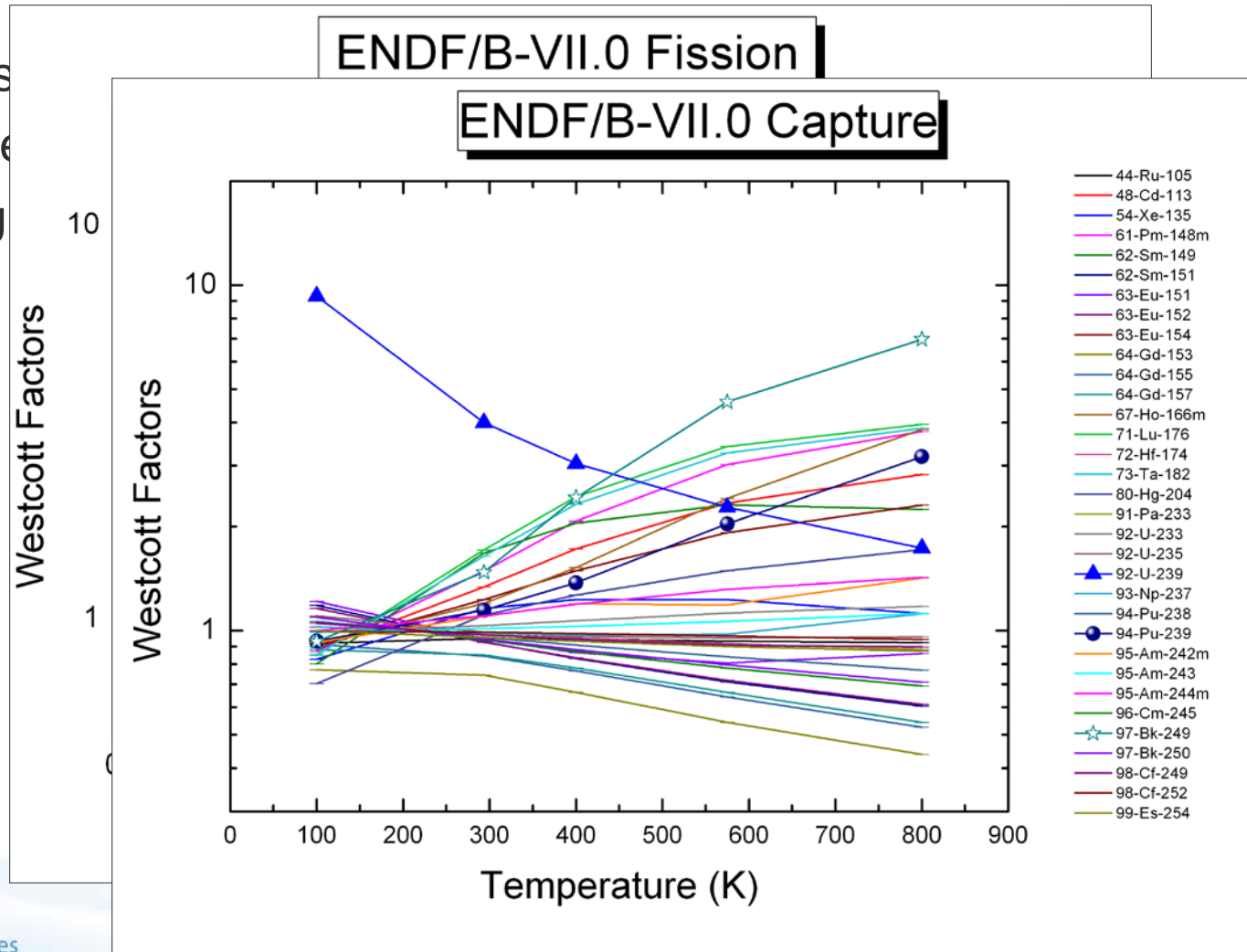
Westcott Factors

- Westcott Factors were applied for capture and fission reactions to test deviation
- ^{239}U evaluation



Temperature Westcott Factors

- Westcott Factors
- Materials
- ^{239}U

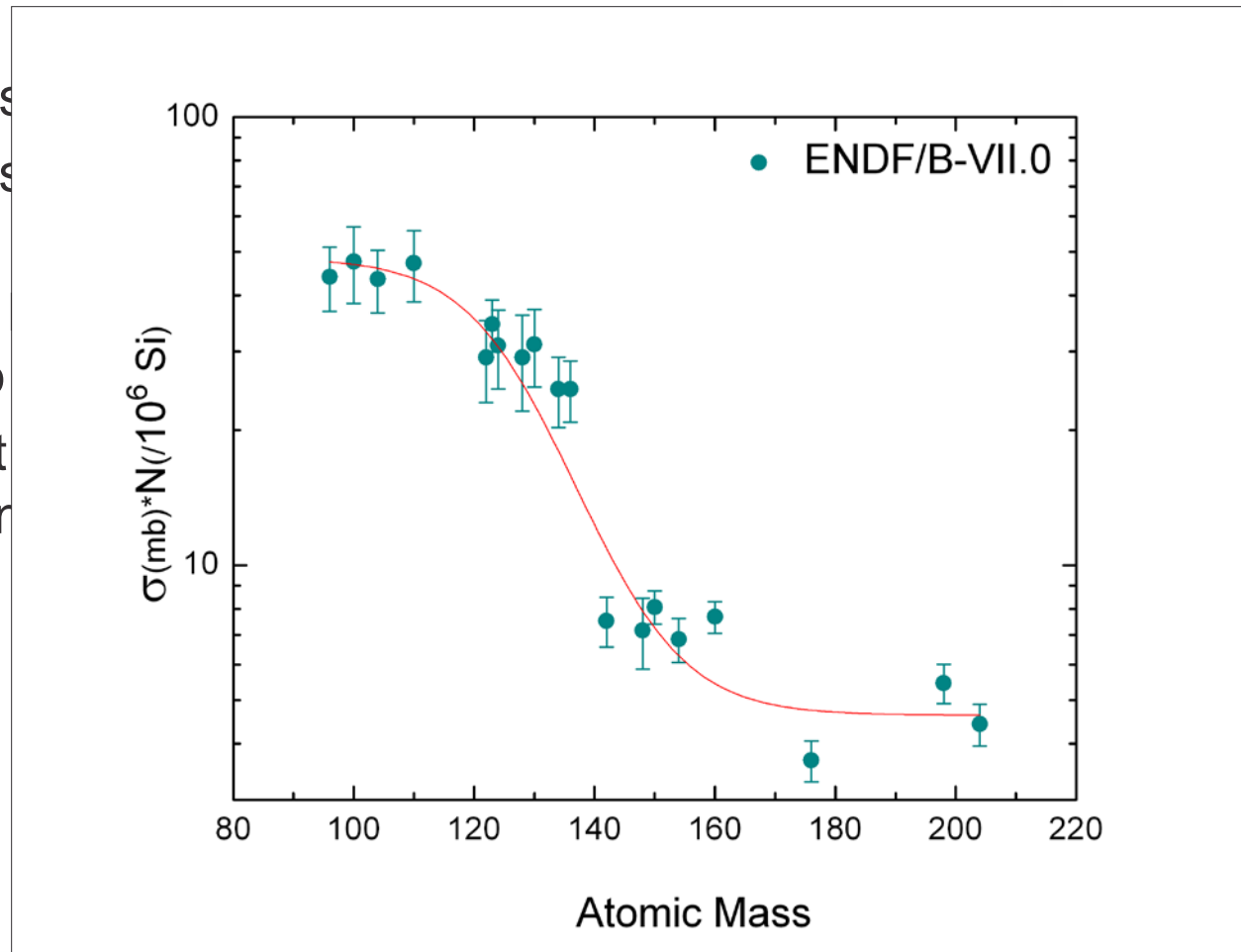


Preliminary Thermal CS & RI Issues

- ENDF/B-VII.0 Fission CS potential problems: ^{232}Pa , $^{237,238}\text{U}$ and ^{248}Cm
- ENDF/B-VII.0 Capture CS potential problems: ^{17}O , ^{43}Ca , ^{54}Cr , $^{74,75}\text{As}$, ^{86}Kr , ^{88}Sr , ^{93}Zr , ^{122}Te , $^{146,147}\text{Pm}$, ^{201}Hg , ^{242}Am , ^{253}Cf
- Fission RI: ^{229}Th , $^{232,233}\text{Pa}$, $^{232,234,238}\text{U}$, ^{237}Np , $^{240,242}\text{Pu}$, $^{242,243,247,248}\text{Cm}$, ^{253}Cf
- Capture RI: ^{13}C , $^{16,17,18}\text{O}$, ^{25}Mg , ^{30}Si , $^{33,36}\text{S}$, $^{35,36}\text{Cl}$, ^{40}Ar , $^{43,44,46}\text{Ca}$, ^{49}Ti , $^{50,53,54}\text{Cr}$, ^{54}Mn , $^{58\text{m}}\text{Co}$, ^{64}Ni , $^{72,74}\text{Ge}$, ^{82}Se , ^{85}Kr , ^{88}Sr , ^{94}Zr , $^{106,110}\text{Pd}$, $^{110\text{m}}\text{Ag}$, ^{106}Cd , $^{118,119}\text{Sn}$, ^{134}Xe , ^{135}Cs , ^{140}Ba , $^{138,140}\text{Ce}$, $^{142,146,147}\text{Nd}$, $^{148\text{m}}\text{Pm}$, ^{144}Sm , $^{152,154,155}\text{Eu}$, $^{152,160}\text{Gd}$, $^{159,160}\text{Tb}$, ^{158}Dy , $^{166\text{m}}\text{Ho}$, ^{171}Tm , ^{169}Yb , $^{174,176}\text{Hf}$, $^{190,192}\text{Os}$, ^{192}Ir , $^{190,192,196}\text{Pt}$, ^{199}Au , $^{200,204}\text{Hg}$, ^{204}Tl , ^{208}Pb , $^{210\text{m}}\text{Bi}$, $^{229,233}\text{Th}$, ^{237}U , $^{236,244,245}\text{Pu}$, ^{253}Cf and ^{251}Es

Low-Fidelity Uncertainties

- We unders
- We unders
main goal
- However,
from ^1H to
- This is set
application



Conclusion & Outlook

- Thermal CS, RI, Westcott Factors, MACS have been calculated for five ENDF libraries, several temperatures
- ENDF/B-VII.0 integral values have been calculated for 575F ~ 575K (PWR temperature)
- Low-Fidelity project results have been applied for nuclear astrophysics
- Several deficiencies have been identified
- Current results will be extensively analyzed, compared with all available benchmarks to understand the origin of deficiencies
- Many thanks to M. Herman, M. Pigni, C. Mattoon and V. Zerkin