

# Feedback Received on ENDF/B-VIII.0

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NATIONAL LABORATORY

 U.S. DEPARTMENT OF  
**ENERGY**

**ENDF/B-VIII.0 was released on  
2 Feb. 2018 by the Cross Section  
Evaluation Working Group  
(CSEWG)**

**ENDF**  
**B-VIII.0**

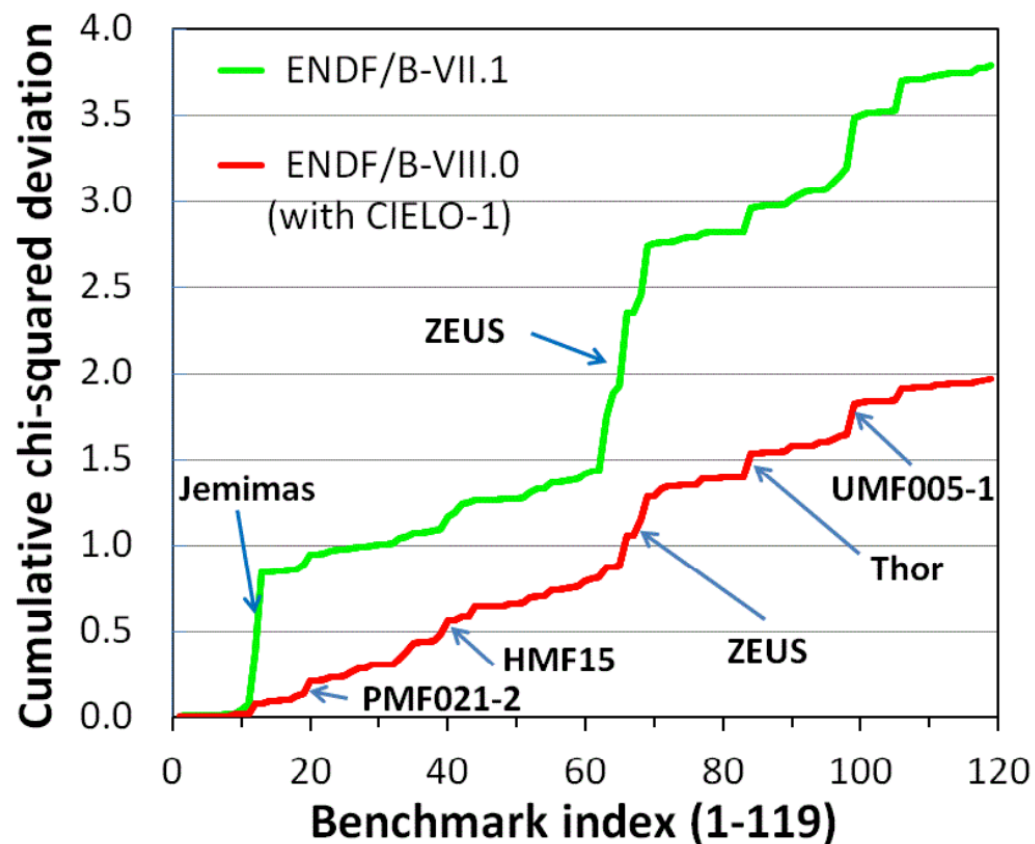
## **Integrates contributions for many sources**

- **Neutron Data Standards** *IAEA, NIST*
- **CIELO Pilot Project** *BNL led Fe, LANL led  $^{16}\text{O}$  and  $^{239}\text{Pu}$ , IAEA led  $^{235,238}\text{U}$*
- **Many new and improved neutron evaluations** *(DP, Crit. Safety, NE, USNDP)*
- **New thermal scattering libraries** *(Crit. Safety, Naval Reactors)*
- **Charged particles** *USNDP (LLNL)*
- **New atomic data** *(LLNL)*
- **Success rests on EXFOR library** *IAEA project but USNDP (BNL) coordinates compilation of reaction data for Western Hemisphere*

Happy  
50<sup>th</sup>  
Anniversary!\*

# ENDF/B-VIII.0 is our best performing and highest quality library yet

- **Validate by simulating well characterized systems**
  - Thousands of critical assembly benchmarks
  - 14 MeV &  $^{252}\text{Cf}(\text{sf})$  source transmission
  - Many other tests
- **Quality also assured by**
  - ADVANCE continuous integration system at BNL
  - Annual Hackathons



M.B. Chadwick et al, Nuclear Data Sheets 148, 189 (2018)

# Overall high quality in thermal and fast benchmarks

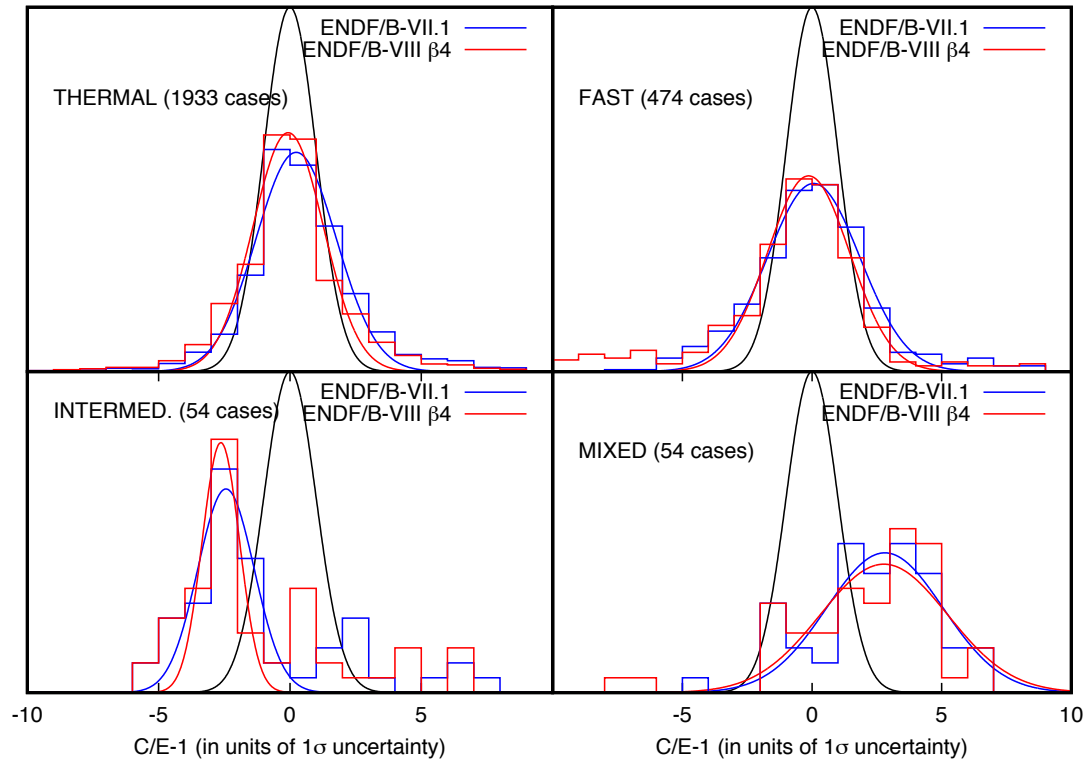


FIG. 29. (Color online) The distribution of  $C/E$ , in units of the combined benchmark and statistical uncertainty. The normal distribution (in black) would be the perfect situation.

M. Chadwick et al., Nuclear Data Sheets 148, 189 (2018)

# Library and evaluations detailed in Nuclear Data Sheets vol. 148 (2018)

- **ENDF/B-VIII.0:** D. Brown *et al.*, Nuclear Data Sheets 148, 1 (2018)
- **Neutron Data Standards:** A. Carlson *et al.*, Nuclear Data Sheets 148, 143 (2018)
- **CIELO Overview:** M.B. Chadwick, *et al.*, Nuclear Data Sheets 148, 189 (2018)
- **CIELO Iron:** M. Herman, *et al.*, Nuclear Data Sheets 148, 214 (2018)
- **CIELO Uranium:** R. Capote, *et al.*, Nuclear Data Sheets 148, 254 (2018)
- **PFNS evaluation:** D. Neudecker, *et al.*, Nuclear Data Sheets 148, 293 (2018)
- **$^{239}\text{Pu}(n,g)$  measurement:** S. Mosby, *et al.*, Nuclear Data Sheets 148, 312 (2018)
- **$^{235}\text{U}$  PFNS measurement:** M. Devlin, *et al.*, Nuclear Data Sheets 148, 322 (2018)



# The ENDF/B-VIII.0 Publicity Tour



- **9<sup>th</sup> Tri-Lab Nuclear Data Workshop, LANL (Mar. 2018)**
  - Invited talk
- **NCSP Tech. Prog. Review, ORNL (Mar. 2018)**
  - Several talks by community
- **PHYSOR 2018, Cancun, MX (Apr. 2018)**
  - Several talks by community
  - Invited talk
  - Proceedings
- **MeV Summer School, ANL (July 2018)**
- **RPSD 2018, Santa Fe, NM (Aug. 2018)**
  - Special session
  - Invited talk
  - Proceedings
- **UC Berkeley Dept. Nucl. Eng. Colloquium (Sep. 2018)**
- **ANS Winter Meeting 2018, Orlando, FL (Nov. 2018)**
  - Special session
  - Panel discussion
  - Proceedings

# This publicity tour gave me a chance to hear back from early adopters

- Generally this is a great library, but there are things to fix
- **ENDF Errata page**  
(<https://www.nndc.bnl.gov/endl/b8.0/errata.html>)
- **Dissatisfaction with “disconnect” between uncertainties and mean values**
- **Missing gamma data**
- **Feedback from PHYSOR-2018:**
  - Ibrahim Attieh (SNC Lavalin) to report on discrepancies in burn-up calculations
  - Fe issues
- **Feedback from RPSD 2018**
  - I will summarize this afternoon