

## LA-UR-18-30443

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Title: Feedback on ENDF/B-VIII.0 covariances from users that could not attend

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Intended for: CSEWG, 2018-11-05/2018-11-07 (Upton, New York, United States)  
Web

Issued: 2018-11-01 (Draft)

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# Feedback on ENDF/B-VIII.0 covariances from users that could not attend

D. Neudecker

CSEWG, Nov/6/18

Feedback from P. Palmiotti, R. Capote and P.  
Griffin

# From Pino Palmiotti (taken directly from his presentation):

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- Missing covariance data for:
  - $P_1$  of  $^{56}\text{Fe}$ ,  $^{235}\text{U}$ ,  $^{238}\text{U}$
  - Cross correlations for  $^{56}\text{Fe}$  reactions that were present in COMMARA 2.0
- Unacceptable values ( $\text{cor} > 1$ ) for:
  - $^{235}\text{U}$  cross cor: inelastic/ (capture and fission), fission/capture
  - $^{238}\text{U}$  cross cor: elastic/inelastic, inelastic/ (capture and fission)
  - $^{238}\text{U}$  fission spectrum (very low energy)
- Strange values ( $\gg \gg \gg 100\%$ ) for  $^{16}\text{O}$   $P_1$  values at low energy
- Some difficulties in processing MF35 data (Oscar Cabellos helped)

# From Pino Palmiotti (summarized from his presentation):

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- **Big problem for the Pn covariance files of  $^{56}\text{Fe}$ ,  $^{235}\text{U}$ , and  $^{238}\text{U}$ :** a new way of representation has been used that is not treated by NJOY2016. Because of that, the code produces a **null matrix after processing**. He does not see how we can then use these files.
- Concern was raised over **large changes from VII.1 to VIII.0** in
  - $^{56}\text{Fe}$ : elastic, inelastic, capture.
  - $^{235}\text{U}$ : fission and PFNS
  - $^{238}\text{U}$ : elastic, inelastic, capture, fission, nubar, PFNS
  - $^{239}\text{Pu}$ : capture, fission.

# From Pino Palmiotti (summarized from his presentation):

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- **Cross section adjustment bigger than 1-sigma std:**
  - $^{56}\text{Fe}(n,\text{inl})$ : from 10 MeV to 800 keV,  $(n,g)$  from 800keV to 60 keV
  - $^{238}\text{U}(n,\text{inl})$ : from 1.3 MeV to 800 keV
  - $^{239}\text{Pu}(n,g)$ : from 15 keV to 2 keV and  $(n,2n)$  from 10 to 6 MeV
- Adjustment behaves expectedly, but some small increase is observed for a few cases of elastic and capture. This could indicate **some problem in the cross correlation among reactions.**

# From Roberto Capote:

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- **Covariance** work needed **should be** integral **part of new evaluations.**
- Much additional work is needed to **estimate the experimental uncertainty budget of some relevant past measurements** (e.g., Neutron Data Standards)

# From Pat Griffin:

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- **Please supply also untweaked nuclear data files.** I.e., if you change, for instance, nu-bar by hand to improve C/E agreement with ICSBEP  $k_{\text{eff}}$  values, provide the file without the tweak in addition to ENDF/B-VIIIx.