Assembling VII.1-Beta0 Evaluations

Data Verification Phase
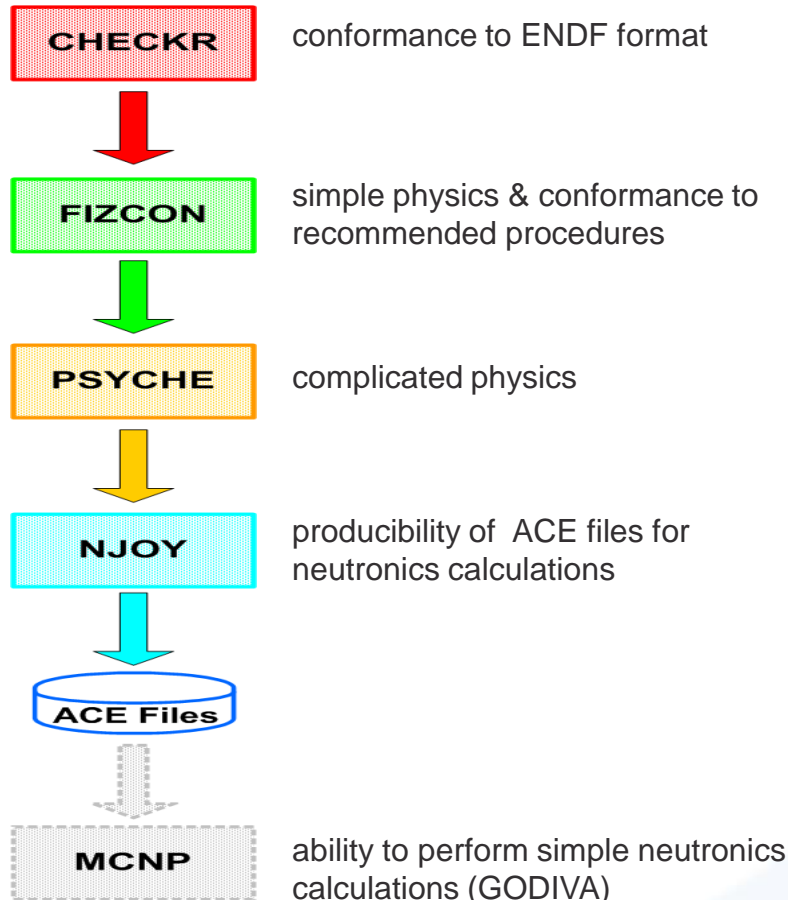
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Processing Flow

CHECKR — conformance to ENDF format

FIZCON — simple physics & conformance to recommended procedures

PSYCHE — complicated physics

NJOY — producibility of ACE files for neutronics calculations

ACE Files

MCNP — ability to perform simple neutronics calculations (GODIVA)

NNDC Linux Cluster

CHECKR, FIZCON, PSYCHE can be downloaded from http://www.nndc.bnl.gov/nndcscr/endf/endf-util/index.html

CHECKR Results

- Total No. of Errors: 129 (22 materials)
- Typical Errors
  - Out of sequence at …
  - Section cannot be checked from sequence number ??? to ??????
  - Section ?/??? not in directory (Missing section)
  - AWR should be set to …
  - ZAI should be set to …
  - SEND card missing
  - MPAR = ? out of range …
  - NK = 1 must equal 3129 as in File 12 or 13 (Pu-239, MF=14, MT=460)

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FIZCON Results

- Total No. of Errors: 166 (30 materials)

- Typical Errors:

  - Discrete 2-body law not permitted for MT=102

  - Correlation coefficient incorrect

  - For LF=1 EPMAX found to be ?.??? should be ?.????

  - Self-covariances for MTI missing

  - List out of order near N = ?

  - MAT=????, MF=33, MT=34 Energy incorrect, expect ?.????E+??, find ?.????E+??

  - Sum of transition probabilities = [# *not equal to 1 here*] for MT=??

FIZCON Results

- Typical Errors (Continued):
  - Section does not span the same energy range as File ??, MT=??
  - Normalization check integral=?.???E?? before sequence #
  - The maximum incident energy of ?.????+?? (eV) should be greater than or equal to ?.????E+??
  - PKE not in range ?.????E+?? to ?.????E+??
  - Energy range for distributions in list records inconsistent with TAB1 record
  - IZAP should be set to ????
  - Sections are not in increasing level energy order at MT= ??
  - Isotope ZA should equal material ZA

NJOY Results

- 7 Materials not processable:

  - Am-241: No convergence in 200 terms in Taylor's series (ACER)

  - Cl-35: Missing send card

  - F-19: Missing send card

  - Li-6: Data conversion error

  - Mn-55: Tape identification (TPID) record error

  - Th-232: Tape identification (TPID) record error

  - Zr-90: Tape identification (TPID) record error

Recommendation and Near-Term Activities

- Evaluations must be run through ENDF-6 utility codes (CHECKR, FIZCON, PSYCHE) before submission to NNDC

- Further data verification of VII.1-Beta0:
  - Processing by STANEF to fix file integrity issues
  - Simple neutronics calculations (GODIVA) using MCNP 6
  - Processing by PUFF (if schedule permits)

- Update capabilities of ENDF-6 utility codes
  - A.Trkov's visit in January 2011