Release notes for ENDF/B Development photoat-060_Nd_000 evaluation

October 13, 2016

- `checkr` Warnings:

  1. A previous error halted parsing of the current section
     MAT=6000, MF= 1, MT=451 (1): Parsing stopped

     ```
     ERROR(S) FOUND IN MAT=6000, MF= 1, MT=451
        SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      163 TO     195
     ```

- `checkr` Errors:

  1. A variable is outside the allowed ENDF range
     MAT=6000, MF= 1, MT=451 (0): Variable range

     ```
     ERROR(S) FOUND IN MAT=6000, MF= 1, MT=451
        MOD =     3 OUT OF RANGE     0 -     1           RECORD NUMBER     163
     ```

  2. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=6000, MF=23, MT=501 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=6000, MF=23, MT=501
        SECTION 23/501 NOT IN DIRECTORY                 RECORD NUMBER     197
     ```

  3. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=6000, MF=23, MT=502 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=6000, MF=23, MT=502
        SECTION 23/502 NOT IN DIRECTORY                 RECORD NUMBER    1074
     ```

  4. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=6000, MF=23, MT=504 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=6000, MF=23, MT=504
        SECTION 23/504 NOT IN DIRECTORY                 RECORD NUMBER    1472
     ```

  5. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=6000, MF=23, MT=515 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=6000, MF=23, MT=515
        SECTION 23/515 NOT IN DIRECTORY                 RECORD NUMBER    1513
     ```

  6. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=6000, MF=23, MT=516 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=6000, MF=23, MT=516
        SECTION 23/516 NOT IN DIRECTORY                 RECORD NUMBER    1547
     ```

  7. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=6000, MF=23, MT=517 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=517
   SECTION 23/517 NOT IN DIRECTORY                  RECORD NUMBER    1601
```

8. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=6000, MF=23, MT=522 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=522
   SECTION 23/522 NOT IN DIRECTORY                  RECORD NUMBER    1642
```

9. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=6000, MF=23, MT=534 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=534
   SECTION 23/534 NOT IN DIRECTORY                  RECORD NUMBER    2054
```

10. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=535 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=535
   SECTION 23/535 NOT IN DIRECTORY                  RECORD NUMBER    2075
```

11. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=536 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=536
   SECTION 23/536 NOT IN DIRECTORY                  RECORD NUMBER    2100
```

12. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=537 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=537
   SECTION 23/537 NOT IN DIRECTORY                  RECORD NUMBER    2125
```

13. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=538 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=538
   SECTION 23/538 NOT IN DIRECTORY                  RECORD NUMBER    2150
```

14. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=539 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=539
   SECTION 23/539 NOT IN DIRECTORY                  RECORD NUMBER    2177
```

15. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=540 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=540
   SECTION 23/540 NOT IN DIRECTORY                  RECORD NUMBER    2208
```

16. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=541 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=541
   SECTION 23/541 NOT IN DIRECTORY                  RECORD NUMBER    2240
```

17. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=542 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=542
   SECTION 23/542 NOT IN DIRECTORY                  RECORD NUMBER    2274
```

18. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=543 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=543
   SECTION 23/543 NOT IN DIRECTORY                  RECORD NUMBER    2307
```

19. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=544 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=544
   SECTION 23/544 NOT IN DIRECTORY                  RECORD NUMBER    2338
```

20. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=545 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=545
   SECTION 23/545 NOT IN DIRECTORY                  RECORD NUMBER    2373
```

21. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=546 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=546
   SECTION 23/546 NOT IN DIRECTORY                  RECORD NUMBER    2409
```

22. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=547 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=547
   SECTION 23/547 NOT IN DIRECTORY                  RECORD NUMBER    2467
```

23. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=548 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=548
   SECTION 23/548 NOT IN DIRECTORY                  RECORD NUMBER    2526
```

24. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=549 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=549
   SECTION 23/549 NOT IN DIRECTORY                  RECORD NUMBER    2583
```

25. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=550 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=550
   SECTION 23/550 NOT IN DIRECTORY                  RECORD NUMBER    2640
```

26. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=551 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=551
   SECTION 23/551 NOT IN DIRECTORY                  RECORD NUMBER    2678
```

27. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=552 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=552
   SECTION 23/552 NOT IN DIRECTORY                  RECORD NUMBER    2719
```

28. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=23, MT=559 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=23, MT=559
   SECTION 23/559 NOT IN DIRECTORY                  RECORD NUMBER    2762
```

29. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=27, MT=502 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=27, MT=502
   SECTION 27/502 NOT IN DIRECTORY                  RECORD NUMBER    2811
```

30. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=27, MT=504 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=27, MT=504
   SECTION 27/504 NOT IN DIRECTORY                  RECORD NUMBER    2862
```

31. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=6000, MF=27, MT=505 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=27, MT=505
   SECTION 27/505 NOT IN DIRECTORY                 RECORD NUMBER    2914
```

32. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=6000, MF=27, MT=506 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=6000, MF=27, MT=506
   SECTION 27/506 NOT IN DIRECTORY                 RECORD NUMBER    3084
```

- `fudge-4.0` Warnings:

1. generic warning message
reaction label 0: Nd + gamma [coherent] / Product: gamma (Error # 0): Warning

```
WARNING: coherentScattering is not a valid distribution component for 2-body reaction
```

2. FIXME: Generic fudge unimplemented message
reaction label 0: Nd + gamma [coherent] / Product: gamma (Error # 2): Generic unimp (c)

```
WARNING: Checking not yet implemented for pointwise type data
```

3. generic warning message
reaction label 1: Nd + gamma [incoherent] / Product: gamma (Error # 0): Warning

```
WARNING: incoherentScattering is not a valid distribution component for 2-body reaction
```

4. FIXME: Generic fudge unimplemented message
reaction label 1: Nd + gamma [incoherent] / Product: gamma (Error # 2): Generic unimp (c)

```
WARNING: Checking not yet implemented for piecewise type data
```

5. Cross sections do not correctly sum up properly according to an ENDF (or equivalent) sumrule
summedReaction label 24: total (Error # 0): Sumrule

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 100.00%
```

6. Cross sections do not correctly sum up properly according to an ENDF (or equivalent) sumrule
summedReaction label 26: photoelectric absorption (Error # 0): Sumrule

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 78.86%
```

- `fudge-4.0` Errors:

1. Calculated and tabulated thresholds don't agree
reaction label 0: Nd + gamma [coherent] / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
```

2. 2-body reaction not in center-of-mass frame
   reaction label 0: Nd + gamma [coherent] / Product: gamma (Error # 1): 2-body not in COM

```
WARNING: 2-body reaction not in center-of-mass frame!
```

3. Calculated and tabulated thresholds don't agree
   reaction label 1: Nd + gamma [incoherent] / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
```

4. 2-body reaction not in center-of-mass frame
   reaction label 1: Nd + gamma [incoherent] / Product: gamma (Error # 1): 2-body not in COM

```
WARNING: 2-body reaction not in center-of-mass frame!
```

5. Energy range of data set does not match cross section range
   reaction label 1: Nd + gamma [incoherent] / Product: gamma / Distribution incoherentScattering - piecewise: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (0.0 -> 1000000000.0) vs (1.0 -> 1e+11)
```

6. Calculated and tabulated thresholds don't agree
   reaction label 2: e- + e+ + Nd [electron field] / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2.044e6 eV!
```

7. Calculated and tabulated thresholds don't agree
   reaction label 3: e- + e+ + Nd [nuclear field] / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
```

8. Calculated and tabulated thresholds don't agree
   reaction label 4: e- + Nd1s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 43597. eV!
```

9. Calculated and tabulated thresholds don't agree
   reaction label 5: e- + Nd2s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 7093.3 eV!
```

10. Calculated and tabulated thresholds don't agree
    reaction label 6: e- + Nd2p1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 6727.4 eV!
```

11. Calculated and tabulated thresholds don't agree
    reaction label 7: e- + Nd2p3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 6200.7 eV!
```

12. Calculated and tabulated thresholds don't agree
    reaction label 8: e- + Nd3s1/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1551.8 eV!
    ```

13. Calculated and tabulated thresholds don't agree
    reaction label 9: e- + Nd3p1/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1392.8 eV!
    ```

14. Calculated and tabulated thresholds don't agree
    reaction label 10: e- + Nd3p3/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1287.1 eV!
    ```

15. Calculated and tabulated thresholds don't agree
    reaction label 11: e- + Nd3d3/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1007.3 eV!
    ```

16. Calculated and tabulated thresholds don't agree
    reaction label 12: e- + Nd3d5/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 984.3200000000001 eV!
    ```

17. Calculated and tabulated thresholds don't agree
    reaction label 13: e- + Nd4s1/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 313.58 eV!
    ```

18. Calculated and tabulated thresholds don't agree
    reaction label 14: e- + Nd4p1/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 252.76 eV!
    ```

19. Calculated and tabulated thresholds don't agree
    reaction label 15: e- + Nd4p3/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 229.72 eV!
    ```

20. Calculated and tabulated thresholds don't agree
    reaction label 16: e- + Nd4d3/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 128.68 eV!
    ```

21. Calculated and tabulated thresholds don't agree
    reaction label 17: e- + Nd4d5/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 124.62 eV!
    ```

22. Calculated and tabulated thresholds don't agree
    reaction label 18: e- + Nd4f5/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 8.32 eV!
    ```

23. Calculated and tabulated thresholds don't agree
reaction label 19: e- + Nd4f7/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 7.85 eV!
```

24. Calculated and tabulated thresholds don't agree
reaction label 20: e- + Nd5s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 44.8 eV!
```

25. Calculated and tabulated thresholds don't agree
reaction label 21: e- + Nd5p1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 28.12 eV!
```

26. Calculated and tabulated thresholds don't agree
reaction label 22: e- + Nd5p3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 24.88 eV!
```

27. Calculated and tabulated thresholds don't agree
reaction label 23: e- + Nd6s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 4.96 eV!
```

28. Calculated and tabulated thresholds don't agree
summedReaction label 24: total / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
```

29. Calculated and tabulated thresholds don't agree
summedReaction label 25: pair product / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
```

30. Calculated and tabulated thresholds don't agree
summedReaction label 26: photoelectric absorption / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 4.96 eV!
```

- `xsectplotter` Warnings:

1. Encountered runtime warning in xsectplotter or Fudge or matplotlib
Error: RuntimeWarning

```
stderr while processing crossSection

/usr/local/lib/python2.7/site-packages/matplotlib-1.3.1-py2.7-linux-x86_64.egg/matplotlib/pyplot.py:412: Runtime
... [3 more lines]
```