# Release notes for ENDF/B Development photoat-077_Ir_000 evaluation

October 13, 2016

- `checkr` Warnings:

  1. A previous error halted parsing of the current section
     *MAT=7700, MF= 1, MT=451 (1): Parsing stopped*

     ```
     ERROR(S) FOUND IN MAT=7700, MF= 1, MT=451
        SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      164 TO     197
     ```

- `checkr` Errors:

  1. A variable is outside the allowed ENDF range
     *MAT=7700, MF= 1, MT=451 (0): Variable range*

     ```
     ERROR(S) FOUND IN MAT=7700, MF= 1, MT=451
        MOD =     3 OUT OF RANGE     0 -     1           RECORD NUMBER     164
     ```

  2. Missing a section in directory so your directory is messed up. This error will break everything else
     *MAT=7700, MF=23, MT=501 (0): Directory (b)*

     ```
     ERROR(S) FOUND IN MAT=7700, MF=23, MT=501
        SECTION 23/501 NOT IN DIRECTORY                 RECORD NUMBER     199
     ```

  3. Missing a section in directory so your directory is messed up. This error will break everything else
     *MAT=7700, MF=23, MT=502 (0): Directory (b)*

     ```
     ERROR(S) FOUND IN MAT=7700, MF=23, MT=502
        SECTION 23/502 NOT IN DIRECTORY                 RECORD NUMBER    1013
     ```

  4. Missing a section in directory so your directory is messed up. This error will break everything else
     *MAT=7700, MF=23, MT=504 (0): Directory (b)*

     ```
     ERROR(S) FOUND IN MAT=7700, MF=23, MT=504
        SECTION 23/504 NOT IN DIRECTORY                 RECORD NUMBER    1360
     ```

  5. Missing a section in directory so your directory is messed up. This error will break everything else
     *MAT=7700, MF=23, MT=515 (0): Directory (b)*

     ```
     ERROR(S) FOUND IN MAT=7700, MF=23, MT=515
        SECTION 23/515 NOT IN DIRECTORY                 RECORD NUMBER    1401
     ```

  6. Missing a section in directory so your directory is messed up. This error will break everything else
     *MAT=7700, MF=23, MT=516 (0): Directory (b)*

     ```
     ERROR(S) FOUND IN MAT=7700, MF=23, MT=516
        SECTION 23/516 NOT IN DIRECTORY                 RECORD NUMBER    1436
     ```

  7. Missing a section in directory so your directory is messed up. This error will break everything else
     *MAT=7700, MF=23, MT=517 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=517
   SECTION 23/517 NOT IN DIRECTORY                  RECORD NUMBER    1491
```

8. Missing a section in directory so your directory is messed up. This error will break everything else
   *MAT=7700, MF=23, MT=522 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=522
   SECTION 23/522 NOT IN DIRECTORY                  RECORD NUMBER    1533
```

9. Missing a section in directory so your directory is messed up. This error will break everything else
   *MAT=7700, MF=23, MT=534 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=534
   SECTION 23/534 NOT IN DIRECTORY                  RECORD NUMBER    1931
```

10. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=535 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=535
   SECTION 23/535 NOT IN DIRECTORY                  RECORD NUMBER    1952
```

11. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=536 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=536
   SECTION 23/536 NOT IN DIRECTORY                  RECORD NUMBER    1976
```

12. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=537 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=537
   SECTION 23/537 NOT IN DIRECTORY                  RECORD NUMBER    1999
```

13. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=538 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=538
   SECTION 23/538 NOT IN DIRECTORY                  RECORD NUMBER    2022
```

14. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=539 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=539
   SECTION 23/539 NOT IN DIRECTORY                  RECORD NUMBER    2048
```

15. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=540 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=540
   SECTION 23/540 NOT IN DIRECTORY                  RECORD NUMBER    2077
```

16. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=541 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=541
   SECTION 23/541 NOT IN DIRECTORY                  RECORD NUMBER    2106
```

17. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=542 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=542
   SECTION 23/542 NOT IN DIRECTORY                  RECORD NUMBER    2139
```

18. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=543 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=543
   SECTION 23/543 NOT IN DIRECTORY                  RECORD NUMBER    2170
```

19. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=544 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=544
   SECTION 23/544 NOT IN DIRECTORY                  RECORD NUMBER    2198
```

20. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=545 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=545
   SECTION 23/545 NOT IN DIRECTORY                  RECORD NUMBER    2231
```

21. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=546 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=546
   SECTION 23/546 NOT IN DIRECTORY                  RECORD NUMBER    2264
```

22. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=547 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=547
   SECTION 23/547 NOT IN DIRECTORY                  RECORD NUMBER    2310
```

23. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=23, MT=548 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=548
   SECTION 23/548 NOT IN DIRECTORY                  RECORD NUMBER    2358
```

24. Missing a section in directory so your directory is messed up. This error will break everything else
*MAT=7700, MF=23, MT=549 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=549
   SECTION 23/549 NOT IN DIRECTORY                  RECORD NUMBER    2415
```

25. Missing a section in directory so your directory is messed up. This error will break everything else
*MAT=7700, MF=23, MT=550 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=550
   SECTION 23/550 NOT IN DIRECTORY                  RECORD NUMBER    2472
```

26. Missing a section in directory so your directory is messed up. This error will break everything else
*MAT=7700, MF=23, MT=551 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=551
   SECTION 23/551 NOT IN DIRECTORY                  RECORD NUMBER    2508
```

27. Missing a section in directory so your directory is messed up. This error will break everything else
*MAT=7700, MF=23, MT=552 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=552
   SECTION 23/552 NOT IN DIRECTORY                  RECORD NUMBER    2552
```

28. Missing a section in directory so your directory is messed up. This error will break everything else
*MAT=7700, MF=23, MT=553 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=553
   SECTION 23/553 NOT IN DIRECTORY                  RECORD NUMBER    2595
```

29. Missing a section in directory so your directory is messed up. This error will break everything else
*MAT=7700, MF=23, MT=554 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=23, MT=554
   SECTION 23/554 NOT IN DIRECTORY                  RECORD NUMBER    2658
```

30. Missing a section in directory so your directory is messed up. This error will break everything else
*MAT=7700, MF=27, MT=502 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=27, MT=502
   SECTION 27/502 NOT IN DIRECTORY                  RECORD NUMBER    2722
```

31. Missing a section in directory so your directory is messed up. This error will break everything else
*MAT=7700, MF=27, MT=504 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=27, MT=504
   SECTION 27/504 NOT IN DIRECTORY                 RECORD NUMBER    2771
```

32. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=27, MT=505 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=27, MT=505
   SECTION 27/505 NOT IN DIRECTORY                 RECORD NUMBER    2822
```

33. Missing a section in directory so your directory is messed up. This error will break everything else
    *MAT=7700, MF=27, MT=506 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=7700, MF=27, MT=506
   SECTION 27/506 NOT IN DIRECTORY                 RECORD NUMBER    2966
```

- `linear` Errors:

  1. Negative cross section found
     *0: Neg. Sig(E)*

```
  Linearize ENDF/B Cross Sections (LINEAR 2015-1)
  ------------------------------------------------------------------------------
  Retrieval Criteria-----------        MAT
  Monitor Mode-----------------        Off
  Minimum Cross Section-------- 1.0000E-10 (Default Option)
... [72 more lines]
```

- `fudge-4.0` Warnings:

  1. generic warning message
     *reaction label 0: Ir + 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: Ir + 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: Ir + 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: Ir + 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 25: 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 27: photoelectric absorption (Error # 0): Sumrule*

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 66.35%
```

- `fudge-4.0` Errors:

1. Calculated and tabulated thresholds don't agree
   *reaction label 0: Ir + 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: Ir + 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: Ir + 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: Ir + 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: Ir + 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+ + Ir [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+ + Ir [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- + Ir1s1/2 / Cross section: (Error # 0): Threshold mismatch*

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 76314. eV!
```

9. Calculated and tabulated thresholds don't agree
   *reaction label 5: e- + Ir2s1/2 / Cross section: (Error # 0): Threshold mismatch*

   ```
   WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 13396. eV!
   ```

10. Calculated and tabulated thresholds don't agree
    *reaction label 6: e- + Ir2p1/2 / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 12859. eV!
    ```

11. Calculated and tabulated thresholds don't agree
    *reaction label 7: e- + Ir2p3/2 / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 11214. eV!
    ```

12. Calculated and tabulated thresholds don't agree
    *reaction label 8: e- + Ir3s1/2 / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3145.7 eV!
    ```

13. Calculated and tabulated thresholds don't agree
    *reaction label 9: e- + Ir3p1/2 / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2900.2 eV!
    ```

14. Calculated and tabulated thresholds don't agree
    *reaction label 10: e- + Ir3p3/2 / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2539. eV!
    ```

15. Calculated and tabulated thresholds don't agree
    *reaction label 11: e- + Ir3d3/2 / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2123.2 eV!
    ```

16. Calculated and tabulated thresholds don't agree
    *reaction label 12: e- + Ir3d5/2 / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2044.8 eV!
    ```

17. Calculated and tabulated thresholds don't agree
    *reaction label 13: e- + Ir4s1/2 / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 675.3200000000001 eV!
    ```

18. Calculated and tabulated thresholds don't agree
    *reaction label 14: e- + Ir4p1/2 / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 570.35 eV!
    ```

19. Calculated and tabulated thresholds don't agree
    *reaction label 15: e- + Ir4p3/2 / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 484.55 eV!
    ```

20. Calculated and tabulated thresholds don't agree
*reaction label 16: e- + Ir4d3/2 / Cross section: (Error # 0): Threshold mismatch*

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 310.52 eV!
```

21. Calculated and tabulated thresholds don't agree
*reaction label 17: e- + Ir4d5/2 / Cross section: (Error # 0): Threshold mismatch*

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 294.58 eV!
```

22. Calculated and tabulated thresholds don't agree
*reaction label 18: e- + Ir4f5/2 / Cross section: (Error # 0): Threshold mismatch*

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 71.33 eV!
```

23. Calculated and tabulated thresholds don't agree
*reaction label 19: e- + Ir4f7/2 / Cross section: (Error # 0): Threshold mismatch*

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 68.06 eV!
```

24. Calculated and tabulated thresholds don't agree
*reaction label 20: e- + Ir5s1/2 / Cross section: (Error # 0): Threshold mismatch*

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 99.14 eV!
```

25. Calculated and tabulated thresholds don't agree
*reaction label 21: e- + Ir5p1/2 / Cross section: (Error # 0): Threshold mismatch*

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 65.68000000000001 eV!
```

26. Calculated and tabulated thresholds don't agree
*reaction label 22: e- + Ir5p3/2 / Cross section: (Error # 0): Threshold mismatch*

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 51.66 eV!
```

27. Calculated and tabulated thresholds don't agree
*reaction label 23: e- + Ir5d3/2 / Cross section: (Error # 0): Threshold mismatch*

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 7.99 eV!
```

28. Calculated and tabulated thresholds don't agree
*reaction label 24: e- + Ir5d5/2 / Cross section: (Error # 0): Threshold mismatch*

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 6.79 eV!
```

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

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

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

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

31. Calculated and tabulated thresholds don't agree
    *summedReaction label 27: photoelectric absorption / Cross section: (Error # 0): Threshold mismatch*

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 6.79 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]
     ```