

Status of the high-energy “LA150” type part of evaluations

M. Herman

National Nuclear Data Center, Brookhaven National Laboratory, USA

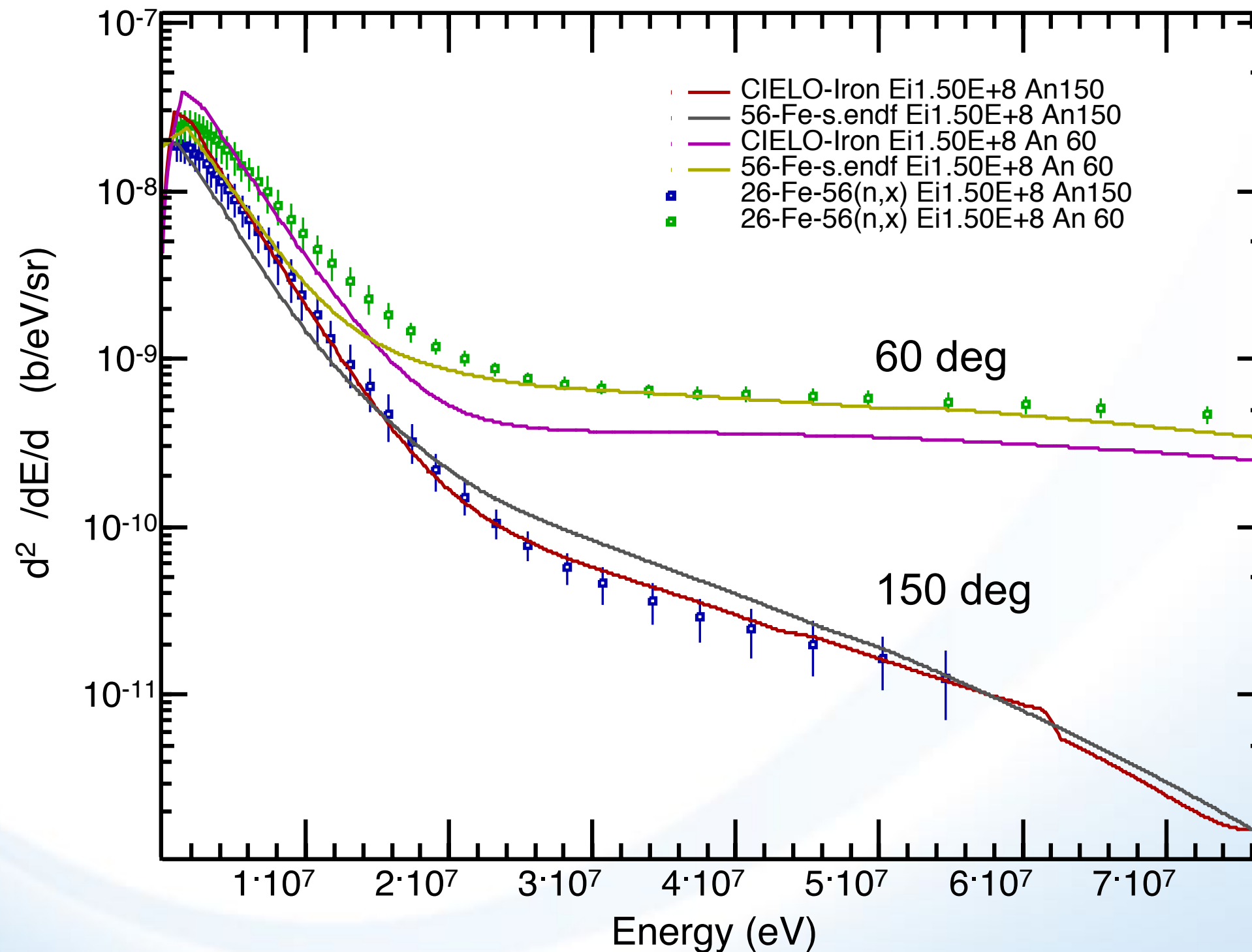


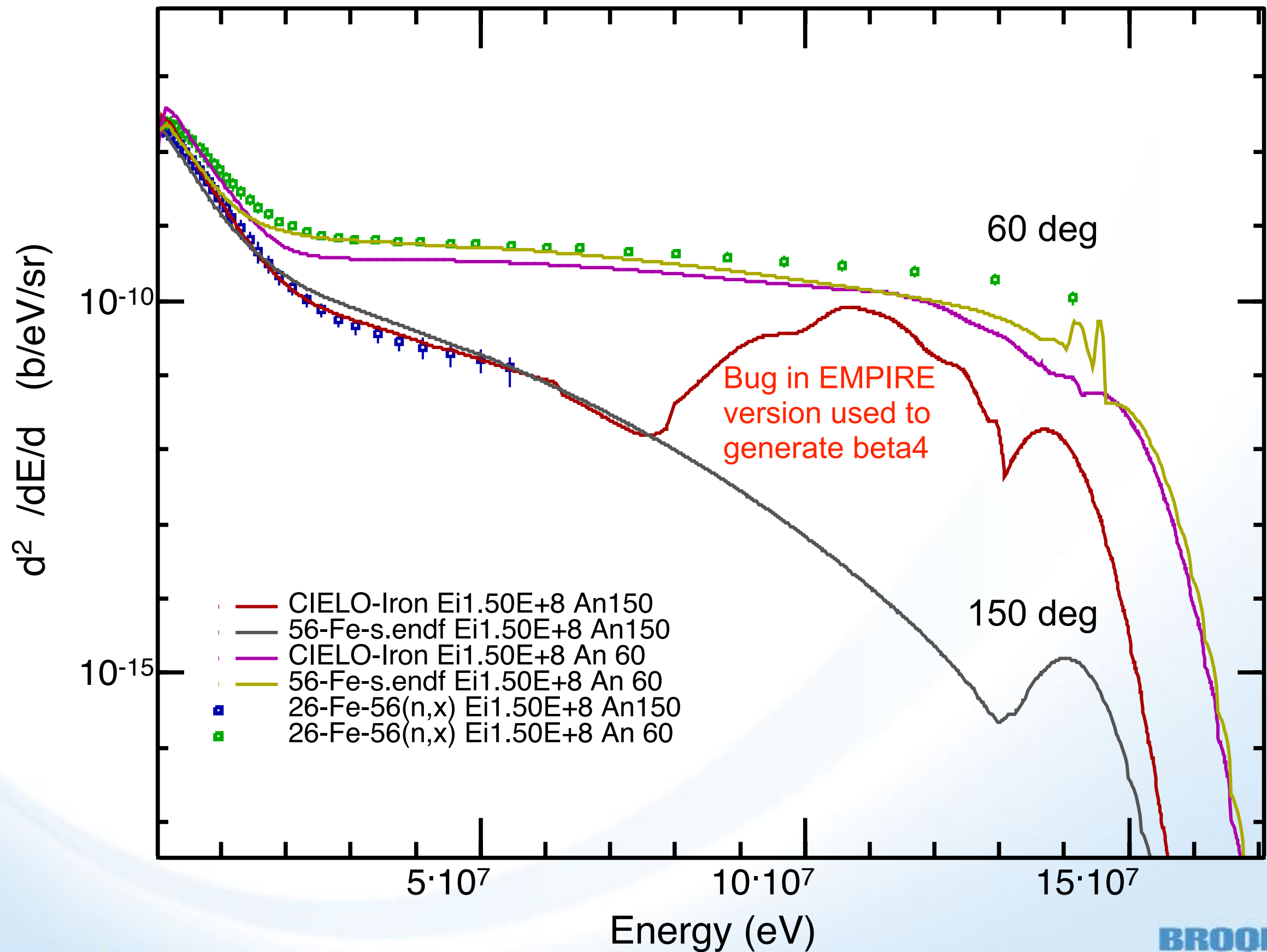
Beta4 contains 47 evaluations extending above 100 MeV

1) 1-H-2	11) 20-CA-43	21) 26-FE-57	31) 74-W-180	41) 80-HG-202
2) 6-C-0	12) 20-CA-44	22) 26-FE-58	32) 74-W-182	42) 80-HG-204
3) 7-N-14	13) 20-CA-46	23) 28-NI-58	33) 74-W-183	43) 82-PB-204
4) 13-AL-27	14) 20-CA-48	24) 28-NI-60	34) 74-W-184	44) 82-PB-206
5) 14-SI-28	15) 24-CR-50	25) 28-NI-61	35) 74-W-186	45) 82-PB-207
6) 14-SI-29	16) 24-CR-52	26) 28-NI-62	36) 80-HG-196	46) 82-PB-208
7) 14-SI-30	17) 24-CR-53	27) 28-NI-64	37) 80-HG-198	47) 83-BI-209
8) 15-P-31	18) 24-CR-54	28) 29-CU-63	38) 80-HG-199	
9) 20-CA-40	19) 26-FE-54	29) 29-CU-65	39) 80-HG-200	
10) 20-CA-42	20) 26-FE-56	30) 41-NB-93	40) 80-HG-201	

Out of these, only CIELO-irons are modified above 20 MeV

Neutron spectra from ^{56}Fe at 150 MeV





Notes

- Bug has been corrected and beta5 will have a correct shape at backward angles above 80 MeV (outgoing)
- Quality of the CIELO evaluation is comparable to VII.1
 - CIELO performs better at low emission energies and at backward angles
 - VII.1 works better for forward scattering at higher emission energies (above 15 MeV)
- We'll need to wait until beta 5 for definite conclusions
- The major difference in the **exclusive** treatment of purely neutron and purely proton channels

Exclusive spectra

- ENDF-6 format requires that each reaction in MF=3 is accompanied by exclusive spectra (i.e., spectra being in coincidence with the production of the residue through the specific reaction)
- It is a tremendous challenge for the reaction model (unless it is Monte Carlo)
- EMPIRE includes algorithm to split usual emission spectra into exclusive spectra, with certain limitations:
 - splitting is done within Weisskopf-Ewing approximation
 - exclusive spectra are assigned to residues rather than reactions (not a problem for (n,xn) and (n,xp))
- They look... sort of odd and are a challenge for transport calculations

Exclusive spectra for $^{56}\text{Fe}(n,xn)$ at 96 MeV

