TABLE 5. List of IRDFF-II benchmark neutron fields. Note that "adhoc" MAT numbers have been assigned (unrelated to the charge of the decaying nucleus).

| No. | Name | MAT | $E_{\rm aver}[MeV]$ | Description |
|---|---|---|---|---|
| | | Measured by Time-of-Flight neutron fields including the $^{252}$Cf(sf) standard | | |
| 1 | $^{252}$Cf(sf) | 9861 | 2.121 | Spontaneous fission neutron spectrum from $^{252}$Cf |
| 2 | $^{235}$U(n$_{th}$,f) PFNS | 9228 | 2.000 | Thermal-neutron induced prompt fission spectrum from $^{235}$U |
| 3 | $^{9}$Be(d,n) 16MeV | 9408 | 5.608 | Spectrum of neutrons from 16 MeV deuterons incident on a beryllium target |
| 4 | $^{9}$Be(d,n) 40MeV | 9409 | 15.58 | Spectrum of neutrons from 40 MeV deuterons incident on a beryllium target |
| | | Measured by Time-of-Flight neutron fields not accepted as benchmark fields | | |
| 1 | $^{233}$U(n$_{th}$,f) PFNS | 9222 | 2.030 | Thermal-neutron induced prompt fission spectrum from $^{233}$U |
| 2 | $^{239}$Pu(n$_{th}$,f) PFNS | 9437 | 2.073 | Thermal-neutron induced prompt fission spectrum from $^{239}$Pu |
| | | Neutron benchmark fields from detailed computational models | | |
| 1 | ACRR-FF-32 | 9010 | 0.575 | ACRR-FF-32 Reactor Extended Cavity Spectrum 640-group |
| 2 | ACRR-CdPoly | 9011 | 0.657 | ACRR-CdPoly Reactor Bucket Spectrum 640-group |
| 3 | ACRR-PLG | 9012 | 0.439 | ACRR-PLG Reactor Bucket Spectrum 640-group |
| 4 | ACRR-LB44 | 9013 | 0.715 | ACRR-LB44 Reactor Bucket Spectrum 640-group |
| 5 | FREC-II | 9015 | 0.545 | FREC-II Spectrum (external cavity attached to ACRR) 640-group |
| 6 | SPR-III | 9014 | 1.251 | SPR-III Reactor Central Cavity Spectrum 640-group |
| 7 | Mol BR1 Mark-III | 9020 | 1.864 | Mol BR1 Mark-III, $^{235}$U converter in Cd and Graphite cavity, 640-group |
| 8 | LR0-Rez | 9032 | 0.646 | Rez-LR0 Reactor spectrum, 640-group |
| 9 | TRIGA-JSI | 9041 | 0.389 | TRIGA Mark-II Pneumatic tube (bare), 640-group |
| 10 | TRIGA-JSI/BN | 9042 | 0.848 | TRIGA Mark-II boron nitride cover, 640-group |
| 11 | TRIGA-JSI/B4C | 9043 | 0.923 | TRIGA Mark-II boron carbide cover, 640-group |
| 12 | TRIGA-JSI/10B4C | 9044 | 1.090 | TRIGA Mark-II enriched boron carbide cover, 640-group |
| 13 | ISNF | 9004 | 1.058 | ISNF Reactor Spectrum 725-group |
| 14 | CFRMF | 9005 | 0.741 | CFRMF Reactor Spectrum from IRDF-2002 |
| 15 | Sigma-Sigma | 9007 | 0.763 | Sigma-Sigma facility in $^{nat}$U and BC spheres inside Graphite column, 725-group |
| 16 | HMF001 | 9101 | 1.433 | Godiva, central region, 725-group |
| 17 | HMF028 | 9102 | 1.343 | Flattop-25, central region, 725-group |
| 18 | IMF007 | 9103 | 0.570 | Big-Ten 725-group |
| 19 | FMR001 | 9110 | 1.483 | IPPE-BR1, central region, 725-group |
| 20 | FNS-Grph-096mm | 9201 | 5.267 | FNS-Graphite block with a D-T source and monitors at 96 mm, 725-group |
| 21 | FNS-Grph-293mm | 9202 | 1.957 | FNS-Graphite block with a D-T source and monitors at 293 mm, 725-group |
| | | ICSBEP spectra not accepted as benchmark fields | | |
| 1 | PMF001 | 9104 | 1.797 | Jezebel, central region, 725-group |
| 2 | PMF002 | 9105 | 1.747 | Jezebel-240, central region, 725-group |
| 3 | PMF006 | 9106 | 1.589 | Flattop-Pu, central region, 725-group |
| 4 | PMF008 | 9107 | 1.681 | Thor, central region, 725-group |
| | | Analytical spectrum functions accepted as benchmark fields | | |
| 1 | Thermal Maxw. | 9901 | | Thermal Maxwellian at 293.6 K |
| 2 | 1/E [0.55eV–2MeV] | 9902 | | Pure 1/E between Ecd and E2 (0.55 eV$< E <$ 2 MeV) |
| 3 | Maxwellian (25 keV) | 9925 | | Maxwellian at 25 keV |
| 4 | Maxwellian (30 keV) | 9930 | | Maxwellian at 30 keV |
| | | Analytical spectrum functions not used as benchmark fields | | |
| 1 | Const. | 9900 | | Constant spectrum Phi=1 |
| 2 | 1/E [0.5eV–20MeV] | 9904 | | Pure 1/E between Ecd and E2 (0.5 eV < E < 20 MeV) |
| 3 | Maxwellian Fission | 9905 | | Pure Maxwellian fission spectrum at temperature 2.03 MeV |
| 4 | Linear | 9910 | | Linear spectrum Phi=E (1.E-5 eV < E < 20 MeV) |
| 5 | Maxwellian (32 keV) | 9932 | | Maxwellian at 32 keV |
| 6 | Maxwellian (35 keV) | 9935 | | Maxwellian at 35 keV |
| 7 | Maxwellian (40 keV) | 9940 | | Maxwellian at 40 keV |
| 8 | Maxwellian (45 keV) | 9945 | | Maxwellian at 45 keV |
| 9 | Maxwellian (50 keV) | 9950 | | Maxwellian at 50 keV |
| 10 | Maxwellian (60 keV) | 9960 | | Maxwellian at 60 keV |