

EXFOR News (July 2014)

New experimental data available from Nuclear Reaction Data Centres

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Quantity codes

| | | | |
|-----|---|-----|--|
| ALF | α -value ($\sigma_{\text{capt}}/\sigma_{\text{fis}}$) | FY | Fission product yield |
| AMP | Length or amplitude | INT | Cross section integral over incident energy |
| CHG | Fragment charge | KE | Kinetic energy |
| CS | Cross section | KER | Kerma factor |
| CSN | Differential with respect to number of particles | MLT | Multiplicity |
| CSP | Partial cross section | NQ | Nuclear quantity |
| CST | Temperature dependent cross section | NU | Fission neutron multiplicity $\bar{\nu}$ |
| D3A | Triple differential $d\Omega_1/d\Omega_2/dE'$ | NUD | Delayed fission neutron multiplicity $\bar{\nu}_d$ |
| D3E | Triple differential $d\Omega/dE'_1/dE'_2$ | NUF | Fragment neutrons |
| D4A | Quadruple diff. $d\Omega_1/d\Omega_2/dE'_1/dE'_2$ | POL | Polarization |
| DA | Differential $d/d\Omega$ | POD | Differential polarization |
| DAA | Double differential $d\Omega_1/d\Omega_2$ | PY | Product yield (other than fission) |
| DAE | Double differential $d\Omega/dE'$ | RI | Resonance integral |
| DAP | Partial differential $d/d\Omega$ | RP | Resonance parameter |
| DAT | Temperature-dependent Legendre coefficient | RR | Reaction rate |
| DE | Differential d/dE' | SIF | Self indication |
| DEP | Energy spectrum for specific group | SPC | Gamma spectrum |
| DP | Diff. by linear momentum of outgoing part. | TSL | Thermal scattering |
| DT | Diff. by 4-momentum transfer squared | TT | Thick target yield |
| ETA | η -value $\bar{\nu}\sigma_{\text{fis}}/(\sigma_{\text{capt}} + \sigma_{\text{fis}})$ | TTD | Differential thick target yield, $d/d\Omega$ |
| EVL | Evaluation | TTP | Partial thick target yield |

Special codes in outgoing particle field

| | | | | | | | |
|-----|------------|------|------------|-----|-----------------------|-----|-------|
| abs | Absorption | fus | Fusion | sc | Scattering | tot | Total |
| el | Elastic | inel | Inelastic | tcx | Total charge changing | | |
| fis | Fission | non | Nonelastic | ths | Thermal scattering | | |

Special codes in incident energy field

| | | | |
|------|-------------------------------|-------|-----------------------------|
| Fast | Fast reactor spectrum average | Maxw | Maxwellian spectrum average |
| Fiss | Fission spectrum average | Spont | Spontaneous (for fission) |

^a [NNDC](#) (USA), [NEADB](#) (France), [NDS](#) (Austria), [CJD](#) (Russia), [CNDC](#) (China), [ATOMKI](#) (Hungary), [NDPCI](#) (India), [JAEA](#) (Japan), [JCPRG](#) (Japan), [KAERI](#) (Korea), [CAJaD](#) (Russia), [CDFE](#) (Russia), [CNPD](#) (Russia), [UkrNDC](#) (Ukraine)

1 Hydrogen 2

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|-----------------------|-----------|--------|---------|-------------|--------|------|-------------------------------|------|-------------|-----------------------|
| | | | | Min | Max | | | | | |
| $d,x+n$ | inclusive | DA | 1USALRL | 1.7+07 | 1.9+07 | Jour | NSE,52,35 | 73 | K.A.Weaver+ | F0218 |
| $d,x+n$ | inclusive | PY | 1USALRL | 8.0+06 | 1.9+07 | Jour | NSE,52,35 | 73 | K.A.Weaver+ | F0218 |
| $^{208}\text{Pb,fis}$ | Many | ? | 2GERGSI | 2.1+11 | 2.1+11 | Jour | NP/A,703,435 | 02 | T.Enqvist+ | O0921 |

2 Helium 3

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|----------|---------------|--------|---------|-------------|--------|------|-------------------------------|------|---------------|-----------------------|
| | | | | Min | Max | | | | | |
| p,el | ^3He | DA | 2UK KCL | 3.1+07 | 5.0+07 | Jour | NP/A,150,570 | 70 | S.A.Harbison+ | F1197 |
| p,el | ^3He | POD | 2UK KCL | 4.9+07 | 4.9+07 | Jour | NP/A,150,570 | 70 | S.A.Harbison+ | F1197 |

3 Lithium 6

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|-------------|---------------|--------|---------|-------------|--------|------|-------------------------------|------|--------------|-----------------------|
| | | | | Min | Max | | | | | |
| α,el | ^6Li | DA | 4RUSKUR | 3.7+07 | 3.7+07 | Jour | IZV,35,(11),2399 | 71 | V.V.Davydov+ | F1199 |

3 Lithium 7

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|------------|---------------|--------|---------|-------------|--------|------|--------------------------------|------|------------|-----------------------|
| | | | | Min | Max | | | | | |
| n,γ | ^8Li | CS | 1USAMSU | 4.0+03 | 1.3+06 | Jour | PR/C,88,065808 | 13 | R.Izsak+ | 14378 |
| p,n | ^7Be | DAP | 2ZZZGEL | 2.0+06 | 7.0+06 | Jour | AND,15,57 | 75 | H.Liskien+ | F0004 |

4 Beryllium 9

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|------------|-----------------|--------|---------|-------------|--------|------|-------------------------------|------|--------------|-----------------------|
| | | | | Min | Max | | | | | |
| p,α | ^6Li | CS | 1USACAL | 2.4+05 | 1.3+06 | Jour | PR,75,1612 | 49 | R.G.Thomas+ | C2096 |
| p,d | ^8Be | CS | 1USACAL | 2.4+05 | 1.3+06 | Jour | PR,75,1612 | 49 | R.G.Thomas+ | C2096 |
| p,el | ^9Be | CS | 1USACAL | 2.9+05 | 1.4+06 | Jour | PR,75,1612 | 49 | R.G.Thomas+ | C2096 |
| $p,x+n$ | inclusive | DAE | 2UK NIN | 3.0+07 | 5.0+07 | Jour | NP/A,143,385 | 70 | A.S.Clough+ | F0789 |
| d,n | ^{10}B | DAP | 2GERBOC | 4.0+06 | 8.0+06 | Jour | NIM/A,247,359 | 86 | F.M.Baumann+ | F1208 |
| $d,x+n$ | inclusive | PY | 2GERBOC | 6.0+06 | 7.5+06 | Jour | NIM/A,247,359 | 86 | F.M.Baumann+ | F1208 |
| α,n | ^{12}C | CSP | 2GERPTB | 7.0+06 | 1.6+07 | Rept | PTB-N-7 | 92 | D.Schmidt+ | O2182 |
| α,n | ^{12}C | DAP | 2GERPTB | 7.0+06 | 1.6+07 | Rept | PTB-N-7 | 92 | D.Schmidt+ | O2182 |

5 Boron

10

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|------------------|-----------------|--------|---------|-------------|--------|------|-------------------------------|------|-------------|-----------------------|
| | | | | Min | Max | | | | | |
| $p,x+n$ | inclusive | DAE | 2UK NIN | 3.0+07 | 5.0+07 | Jour | NP/A,143,385 | 70 | A.S.Clough+ | F0789 |
| $^3\text{He,el}$ | ^{10}B | DA | 2GERMPH | 1.4+07 | 1.4+07 | Jour | ZP,240,217 | 70 | F.Nusslin+ | F0417 |

5 Boron

11

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|------------------|-----------------|--------|---------|-------------|--------|------|-------------------------------|------|-------------|-----------------------|
| | | | | Min | Max | | | | | |
| $p,x+n$ | inclusive | DAE | 2UK NIN | 3.0+07 | 5.0+07 | Jour | NP/A,143,385 | 70 | A.S.Clough+ | F0789 |
| $^3\text{He,el}$ | ^{11}B | DA | 2GERMPH | 1.4+07 | 1.4+07 | Jour | ZP,240,217 | 70 | F.Nusslin+ | F0417 |

6 Carbon

12

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|--------------------|-----------------|--------|---------|-------------|--------|------|--------------------------------|------|----------------|-----------------------|
| | | | | Min | Max | | | | | |
| $p,x+n$ | inclusive | DAE | 2UK NIN | 5.0+07 | 5.0+07 | Jour | NP/A,143,385 | 70 | A.S.Clough+ | F0789 |
| α,γ | ^{16}O | DAP | VDGT | 7.1+06 | 8.2+06 | Jour | NP,58,529 | 64 | I.V.Mitchell+ | F1051 |
| $^6\text{He,el}$ | ^{12}C | DA | 1CANTMF | 3.0+07 | 3.0+07 | Jour | PR/C,89,024602 | 14 | D.Smalley+ | C2091 |
| $^6\text{He,inel}$ | ^{12}C | DAP | 1CANTMF | 3.0+07 | 3.0+07 | Jour | PR/C,89,024602 | 14 | D.Smalley+ | C2091 |
| $^6\text{Li,el}$ | ^{12}C | DA | 4RUSKUR | 3.0+07 | 3.0+07 | Jour | IZV,35,(11),2399 | 71 | V.V.Davydov+ | F1199 |
| $^{18}\text{O,el}$ | ^{12}C | DA | 1USATAM | 2.2+08 | 2.2+08 | Jour | PR/C,89,025809 | 14 | T.Al-Abdullah+ | C2090 |

6 Carbon

13

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|-------------------------------|-----------------|--------|---------|-------------|--------|------|--------------------------------|------|----------------|-----------------------|
| | | | | Min | Max | | | | | |
| $p,0$ | | RP | 1USARIC | | | Jour | PR,122,884 | 61 | E.Kashy+ | C2098 |
| p,el | ^{13}C | DA | 1USARIC | 2.6+06 | 5.0+06 | Jour | PR,122,884 | 61 | E.Kashy+ | C2098 |
| $p,x+n$ | inclusive | DAE | 2UK NIN | 3.0+07 | 5.0+07 | Jour | NP/A,143,385 | 70 | A.S.Clough+ | F0789 |
| $^3\text{He,el}$ | ^{13}C | DA | 2GERMPH | 1.4+07 | 1.4+07 | Jour | ZP,240,217 | 70 | F.Nusslin+ | F0417 |
| $^{17}\text{O},^{12}\text{C}$ | ^{18}O | DAP | 1USATAM | 2.0+08 | 2.0+08 | Jour | PR/C,89,025809 | 14 | T.Al-Abdullah+ | C2090 |
| $^{17}\text{O,el}$ | ^{13}C | DA | 1USATAM | 2.0+08 | 2.0+08 | Jour | PR/C,89,025809 | 14 | T.Al-Abdullah+ | C2090 |

7 Nitrogen

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|----------|-------------------------|--------|---------|-------------|--------|------|-------------------------------|------|---------------|-----------------------|
| | | | | Min | Max | | | | | |
| $p,0$ | | RP | 1CANCRC | | | Jour | PR,115,1655 | 59 | A.J.Ferguson+ | C2094 |
| p,el | $^{\text{nat}}\text{N}$ | DA | 1CANCRC | 1.1+06 | 2.8+06 | Jour | PR,115,1655 | 59 | A.J.Ferguson+ | C2094 |

8

Oxygen

16

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|--------------------|-------------------|--------|---------|-------------|--------|------|-------------------------------|------|--------------|-----------------------|
| | | | | Min | Max | | | | | |
| ${}^6\text{Li,el}$ | ${}^{16}\text{O}$ | DA | 4RUSKUR | 3.0+07 | 3.0+07 | Jour | IZV,35,(11),2399 | 71 | V.V.Davydov+ | F1199 |

9

Fluorine

17

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|------------|--------------------|--------|---------|-------------|-----|------|--------------------------------|------|----------------|-----------------------|
| | | | | Min | Max | | | | | |
| p,γ | ${}^{18}\text{Ne}$ | RI | 1USATAM | | | Jour | PR/C,89,025809 | 14 | T.Al-Abdullah+ | C2090 |

11

Sodium

23

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|------------|--------------------|--------|---------|-------------|--------|------|--------------------------------|------|----------------|-----------------------|
| | | | | Min | Max | | | | | |
| p,γ | | RP | 1USATNL | 1.4+05 | 5.1+05 | Jour | PR/C,88,065806 | 13 | J.M.Cesaratto+ | C2076 |
| p,γ | ${}^{24}\text{Mg}$ | MLT | 1USATNL | 5.1+05 | 5.4+05 | Jour | PR/C,88,065806 | 13 | J.M.Cesaratto+ | C2076 |

12

Magnesium

24

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|----------|--------------------|--------|---------|-------------|--------|------|-------------------------------|------|-------------|-----------------------|
| | | | | Min | Max | | | | | |
| d,p | ${}^{25}\text{Mg}$ | DAP | 2FR STR | 5.0+06 | 6.0+06 | Jour | NP,88,675 | 66 | A.Gallmann+ | F1191 |

12

Magnesium

25

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|-----------------|--------------------|--------|---------|-------------|--------|------|-------------------------------|------|-------------|-----------------------|
| | | | | Min | Max | | | | | |
| p,el | ${}^{25}\text{Mg}$ | DA | 2FR STR | 6.0+06 | 6.0+06 | Jour | NP,88,675 | 66 | A.Gallmann+ | F1191 |
| p,inel | ${}^{25}\text{Mg}$ | DAP | 2FR STR | 6.0+06 | 6.0+06 | Jour | NP,88,675 | 66 | A.Gallmann+ | F1191 |

14

Silicon

28

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|--------------------|--------------------|--------|---------|-------------|--------|------|-------------------------------|------|--------------|-----------------------|
| | | | | Min | Max | | | | | |
| $p,0$ | | RP | 1USARIC | | | Jour | PR,122,920 | 61 | T.A.Belote+ | C2095 |
| p,el | ${}^{28}\text{Si}$ | DA | 1USARIC | 2.0+06 | 5.0+06 | Jour | PR,122,920 | 61 | T.A.Belote+ | C2095 |
| p,inel | ${}^{28}\text{Si}$ | DA | 1USARIC | 3.0+06 | 5.2+06 | Jour | PR,122,920 | 61 | T.A.Belote+ | C2095 |
| ${}^6\text{Li,el}$ | ${}^{28}\text{Si}$ | DA | 4RUSKUR | 3.0+07 | 3.0+07 | Jour | IZV,35,(11),2399 | 71 | V.V.Davydov+ | F1199 |

18 Argon

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|-------------|-------------------|--------|---------|-------------|--------|------|-------------------------------|------|---------------|-----------------------|
| | | | | Min | Max | | | | | |
| <i>p,el</i> | ^{nat} Ar | DA | 1CANCRC | 1.6+06 | 1.6+06 | Jour | PR,115,1655 | 59 | A.J.Ferguson+ | C2094 |

20 Calcium 40

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|--------------------|------------------|--------|---------|-------------|--------|------|----------------------------------|------|--------------|-----------------------|
| | | | | Min | Max | | | | | |
| ⁶ Li,el | ⁴⁰ Ca | DA | 4RUSKUR | 3.0+07 | 3.0+07 | Jour | IZV,35,(11),2399 | 71 | V.V.Davydov+ | F1199 |

22 Titanium 48

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---------------|------------------|--------|---------|-------------|--------|------|----------------------------------|------|---------------|-----------------------|
| | | | | Min | Max | | | | | |
| <i>p,0</i> | | RP | 1USATNL | | | Jour | NP/A,194,(2),353 | 72 | N.H.Prochnow+ | C2097 |
| <i>p,el</i> | ⁴⁸ Ti | DA | 1USATNL | 1.8+06 | 3.1+06 | Jour | NP/A,194,(2),353 | 72 | N.H.Prochnow+ | C2097 |
| <i>p,incl</i> | ⁴⁸ Ti | DAP | 1USATNL | 2.3+06 | 3.1+06 | Jour | NP/A,194,(2),353 | 72 | N.H.Prochnow+ | C2097 |

28 Nickel 58

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|--------------------|------------------|--------|---------|-------------|--------|------|----------------------------------|------|--------------|-----------------------|
| | | | | Min | Max | | | | | |
| ⁶ Li,el | ⁵⁸ Ni | DA | 4RUSKUR | 3.0+07 | 3.0+07 | Jour | IZV,35,(11),2399 | 71 | V.V.Davydov+ | F1199 |

29 Copper 63

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|--------------|-----------|--------|---------|-------------|--------|------|--------------------------------|------|----------------|-----------------------|
| | | | | Min | Max | | | | | |
| <i>d,x+n</i> | inclusive | DA | 1USAOHO | 3.0+06 | 1.2+07 | Jour | PR/C,88,064324 | 13 | A.P.D.Ramirez+ | C2087 |
| <i>d,x+n</i> | inclusive | DAE | 1USAOHO | 6.0+06 | 7.5+06 | Jour | PR/C,88,064324 | 13 | A.P.D.Ramirez+ | C2087 |

29 Copper 65

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|--------------|-----------|--------|---------|-------------|--------|------|--------------------------------|------|----------------|-----------------------|
| | | | | Min | Max | | | | | |
| <i>d,x+n</i> | inclusive | DA | 1USAOHO | 4.0+06 | 1.3+07 | Jour | PR/C,88,064324 | 13 | A.P.D.Ramirez+ | C2087 |
| <i>d,x+n</i> | inclusive | DAE | 1USAOHO | 6.0+06 | 7.5+06 | Jour | PR/C,88,064324 | 13 | A.P.D.Ramirez+ | C2087 |
| <i>d,x+n</i> | inclusive | DE | 1USAOHO | 6.0+06 | 7.5+06 | Jour | PR/C,88,064324 | 13 | A.P.D.Ramirez+ | C2087 |

| | | | | 30 | | Zinc | | | | 64 | |
|----------|---------|--------|--------|-------------|-----|--------------|--------------------------------|--|------|----------------|-----------------------|
| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | | Date | Author | Data # |
| | | | | Min | Max | Ref Vol Page | | | | | |
| 0,0 | | NQ | 1USAHO | Spont | | Jour | PR/C,88,064324 | | 13 | A.P.D.Ramirez+ | C2087 |

| | | | | 30 | | Zinc | | | | 66 | |
|----------|---------|--------|--------|-------------|-----|--------------|--------------------------------|--|------|----------------|-----------------------|
| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | | Date | Author | Data # |
| | | | | Min | Max | Ref Vol Page | | | | | |
| 0,0 | | NQ | 1USAHO | Spont | | Jour | PR/C,88,064324 | | 13 | A.P.D.Ramirez+ | C2087 |

| | | | | 31 | | Gallium | | | | 86 | |
|----------|------------------|--------|---------|-------------|-----|--------------|--------------------------------|--|------|------------|-----------------------|
| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | | Date | Author | Data # |
| | | | | Min | Max | Ref Vol Page | | | | | |
| 0,B- | ⁸⁶ Ge | ? | 1USAORL | Spont | | Jour | PRL,111,132502 | | 13 | K.Miernik+ | 14380 |

| | | | | 36 | | Krypton | | | | 86 | |
|--------------|------------------|--------|---------|-------------|--------|--------------|-----------------------------|--|------|----------|-----------------------|
| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | | Date | Author | Data # |
| | | | | Min | Max | Ref Vol Page | | | | | |
| <i>n,γ</i> | ⁸⁷ Kr | CS | 1USAORL | Maxwl | | Jour | PR/C,28,602 | | 83 | S.Raman+ | 12837 |
| <i>n,tot</i> | | CS | 1USAORL | 4.7+04 | 3.0+05 | Jour | PR/C,28,602 | | 83 | S.Raman+ | 12837 |

| | | | | 40 | | Zirconium | | | | 94 | |
|-------------|------------------|--------|---------|-------------|--------|--------------|---------------|--|------|------------------|-----------------------|
| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | | Date | Author | Data # |
| | | | | Min | Max | Ref Vol Page | | | | | |
| <i>p,el</i> | ⁹⁴ Zr | DA | 4RUSFEI | 5.6+06 | 9.0+06 | Jour | YF,33,1161 | | 81 | A.I.Baryshnikov+ | F1202 |

| | | | | 46 | | Palladium | | | | | |
|--------------|---------|--------|---------|-------------|--------|--------------|----------------------------|--|------|-------------|-----------------------|
| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | | Date | Author | Data # |
| | | | | Min | Max | Ref Vol Page | | | | | |
| <i>n,tot</i> | | CS | 1USABNL | 1.0+01 | 4.5+01 | Jour | PR,93,1030 | | 54 | H.H.Landon+ | 12029 |

| | | | | 49 | | Indium | | | | 115 | |
|-------------|---------|--------|---------|-------------|--------|--------------|-----------------|--|------|-------------|-----------------------|
| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation | | Date | Author | Data # |
| | | | | Min | Max | Ref Vol Page | | | | | |
| <i>n,0</i> | | RP | 4RUSFEI | 5.0+03 | 8.0+04 | Rept | INDC(CCP)-68,57 | | 75 | V.S.Shorin+ | 41330 |
| <i>n,el</i> | | RP | 4RUSFEI | 5.0+03 | 8.0+04 | Rept | INDC(CCP)-68,57 | | 75 | V.S.Shorin+ | 41330 |

50

Tin

120

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|--------------------|---------------------|--------|---------|-------------|--------|------|-------------------------------|------|--------------|-----------------------|
| | | | | Min | Max | | | | | |
| ${}^6\text{Li,el}$ | ${}^{120}\text{Sn}$ | DA | 4RUSKUR | 3.0+07 | 3.0+07 | Jour | IZV,35,(11),2399 | 71 | V.V.Davydov+ | F1199 |

51

Antimony

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|----------------|---------|--------|---------|-------------|--------|------|-------------------------------|------|----------------|-----------------------|
| | | | | Min | Max | | | | | |
| p,fis | Many | CS | 4ZZZDUB | 6.6+08 | 6.6+08 | Jour | ZET,40,409 | 61 | A.K.Lavrukina+ | O0626 |

53

Iodine

127

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---------------|---------|--------|---------|-------------|--------|------|-------------------------------|------|-------------|-----------------------|
| | | | | Min | Max | | | | | |
| $n,0$ | | RP | 4RUSFEI | 5.0+03 | 8.0+04 | Rept | INDC(CCP)-68,57 | 75 | V.S.Shorin+ | 41330 |
| n,el | | RP | 4RUSFEI | 5.0+03 | 8.0+04 | Rept | INDC(CCP)-68,57 | 75 | V.S.Shorin+ | 41330 |

64

Gadolinium

155

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|----------|---------|--------|---------|-------------|--------|------|-------------------------------|------|--------------|-----------------------|
| | | | | Min | Max | | | | | |
| $n,0$ | | RP | 4RUSKUR | 6.3+00 | 1.0+03 | Jour | YF,52,(3),625 | 90 | F.N.Belyaev+ | 41107 |

64

Gadolinium

157

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|----------|---------|--------|---------|-------------|--------|------|-------------------------------|------|--------------|-----------------------|
| | | | | Min | Max | | | | | |
| $n,0$ | | RP | 4RUSKUR | 1.7+01 | 7.6+02 | Jour | YF,52,(3),625 | 90 | F.N.Belyaev+ | 41107 |

73

Tantalum

181

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---------------|---------|--------|---------|-------------|--------|------|-------------------------------|------|-------------|-----------------------|
| | | | | Min | Max | | | | | |
| $n,0$ | | RP | 4RUSFEI | 5.0+03 | 8.0+04 | Rept | INDC(CCP)-68,57 | 75 | V.S.Shorin+ | 41330 |
| n,el | | RP | 4RUSFEI | 5.0+03 | 8.0+04 | Rept | INDC(CCP)-68,57 | 75 | V.S.Shorin+ | 41330 |

79

Gold

197

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|----------|---------|--------|------|-------------|-----|------|-------------------------------|------|--------|--------|
| | | | | Min | Max | | | | | |

| | | | | | | | | | | |
|--------------------|---------------------|----|---------|--------|--------|------|------------------|----|--------------|-------|
| $n,0$ | | RP | 4RUSFEI | 5.0+03 | 8.0+04 | Rept | INDC(CCP)-68,57 | 75 | V.S.Shorin+ | 41330 |
| n,el | | RP | 4RUSFEI | 5.0+03 | 8.0+04 | Rept | INDC(CCP)-68,57 | 75 | V.S.Shorin+ | 41330 |
| ${}^6\text{Li},el$ | ${}^{197}\text{Au}$ | DA | 4RUSKUR | 3.0+07 | 3.0+07 | Jour | IZV,35,(11),2399 | 71 | V.V.Davydov+ | F1199 |

82 **Lead** 208

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---------------------|---------------------|--------|---------|-------------|--------|------|-------------------------------|------|--------------|--------|
| | | | | Min | Max | | | | | |
| $p,x+\alpha$ | inclusive | CSP | 2BLGLVN | 6.3+07 | 6.3+07 | Jour | EPJ/A,23,49 | 05 | A.Guertin+ | O1146 |
| $p,x+d$ | inclusive | CSP | 2BLGLVN | 6.3+07 | 6.3+07 | Jour | EPJ/A,23,49 | 05 | A.Guertin+ | O1146 |
| $p,x+{}^3\text{He}$ | inclusive | CSP | 2BLGLVN | 6.3+07 | 6.3+07 | Jour | EPJ/A,23,49 | 05 | A.Guertin+ | O1146 |
| $p,x+n$ | inclusive | CSP | 2BLGLVN | 6.3+07 | 6.3+07 | Jour | EPJ/A,23,49 | 05 | A.Guertin+ | O1146 |
| $p,x+p$ | inclusive | CSP | 2BLGLVN | 6.3+07 | 6.3+07 | Jour | EPJ/A,23,49 | 05 | A.Guertin+ | O1146 |
| $p,x+t$ | inclusive | CSP | 2BLGLVN | 6.3+07 | 6.3+07 | Jour | EPJ/A,23,49 | 05 | A.Guertin+ | O1146 |
| ${}^6\text{Li},el$ | ${}^{208}\text{Pb}$ | DA | 4RUSKUR | 3.0+07 | 3.0+07 | Jour | IZV,35,(11),2399 | 71 | V.V.Davydov+ | F1199 |

92 **Uranium** 233

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|----------|---------|--------|---------|-------------|--------|------|-------------------------------|------|----------------|--------|
| | | | | Min | Max | | | | | |
| n,fis | Many | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | Many | KE | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | | NU | 4RUSFEI | 4.0+06 | 1.5+07 | Jour | AE,4,(2),188 | 58 | G.N.Smirenkin+ | 40388 |

92 **Uranium** 235

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|----------|-----------------|--------|---------|-------------|--------|------|-------------------------------|------|-----------------|--------|
| | | | | Min | Max | | | | | |
| n,fis | Many | CHG | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | | CS | 1USAANL | 3.8+05 | 6.6+05 | Jour | PRL,16,525 | 66 | A.B.Smith+ | 12369 |
| n,fis | Many | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | Many | KE | 4RUSLIN | 2.5-02 | 2.5-02 | Jour | AE,27,(1),31 | 69 | A.A.Vorob'Ev+ | 40243 |
| n,fis | Many | KE | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | | NU | 4RUSRI | 1.5+07 | 1.5+07 | Jour | AE,4,374 | 58 | A.N.Protopopov+ | 40392 |
| n,fis | | NU | 4RUSFEI | 4.0+06 | 1.5+07 | Jour | AE,4,(2),188 | 58 | G.N.Smirenkin+ | 40388 |
| n,fis | | NUF | 4RUSLIN | 3.6-02 | 3.6-02 | Jour | YK,2011,(1-2),37 | 13 | A.S.Vorobyev+ | 41597 |
| n,fis | | ? | 4RUSLIN | 3.6-02 | 3.6-02 | Jour | YK,2011,(1-2),37 | 13 | A.S.Vorobyev+ | 41597 |
| n,fis | n | KE | 4RUSLIN | 3.6-02 | 3.6-02 | Jour | YK,2011,(1-2),37 | 13 | A.S.Vorobyev+ | 41597 |
| n,fis | ${}^2\text{H}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Jour | AE,27,(1),31 | 69 | A.A.Vorob'Ev+ | 40243 |
| n,fis | ${}^2\text{H}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | ${}^3\text{H}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Jour | AE,27,(1),31 | 69 | A.A.Vorob'Ev+ | 40243 |
| n,fis | ${}^3\text{H}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | ${}^4\text{He}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Jour | AE,27,(1),31 | 69 | A.A.Vorob'Ev+ | 40243 |
| n,fis | ${}^4\text{He}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | ${}^6\text{He}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Jour | AE,27,(1),31 | 69 | A.A.Vorob'Ev+ | 40243 |
| n,fis | ${}^6\text{He}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | ${}^8\text{He}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | ${}^7\text{Li}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Jour | AE,27,(1),31 | 69 | A.A.Vorob'Ev+ | 40243 |
| n,fis | ${}^7\text{Li}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| n,fis | ${}^8\text{Li}$ | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Jour | AE,27,(1),31 | 69 | A.A.Vorob'Ev+ | 40243 |

| | | | | | | | | | | |
|---------------|------------------|----|---------|--------|--------|------|--------------|----|---------------|-------|
| <i>n</i> ,fis | ⁸ Li | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁹ Li | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁹ Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Jour | AE,27,(1),31 | 69 | A.A.Vorob'Ev+ | 40243 |
| <i>n</i> ,fis | ⁹ Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ¹⁰ Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Jour | AE,27,(1),31 | 69 | A.A.Vorob'Ev+ | 40243 |
| <i>n</i> ,fis | ¹⁰ Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ¹¹ Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ¹² Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ¹¹ B | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ¹⁴ C | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ²⁰ O | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |

92 Uranium 238

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|-----------------------|------------------|--------|---------|-------------|--------|------|-------------------------------|------|------------|--------|
| | | | | Min | Max | | | | | |
| <i>n</i> ,fis | Many | CHG | 1USALAS | 1.0+06 | 4.0+08 | Jour | EPJ/A,49,114 | 13 | T.Granier+ | 14377 |
| <i>n</i> ,inel | ²³⁸ U | ? | 4RUSKUR | 1.0+06 | 1.0+06 | Jour | YF,77,(2),154 | 14 | L.I.Govor+ | 41598 |
| <i>n</i> ,x+ γ | inclusive | ? | 4RUSKUR | 1.0+06 | 1.0+06 | Jour | YF,77,(2),154 | 14 | L.I.Govor+ | 41598 |
| <i>p</i> ,fis | Many | CHG | 2SF JYV | 2.5+07 | 2.5+07 | Jour | PL/B,405,230 | 97 | M.Huhta+ | 00924 |

94 Plutonium 239

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---------------|------------------|--------|---------|-------------|--------|------|--------------------------------|------|----------------|--------|
| | | | | Min | Max | | | | | |
| <i>n</i> ,fis | Many | CHG | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | Many | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | Many | KE | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | | NU | 4RUSFEI | 4.0+06 | 1.5+07 | Jour | AE,4,(2),188 | 58 | G.N.Smirenkin+ | 40388 |
| <i>n</i> ,fis | | NUF | 1USALAS | 1.0+06 | 2.0+08 | Jour | PR/C,89,014611 | 14 | A.Chatillon+ | 14379 |
| <i>n</i> ,fis | | ? | 1USALAS | 2.0+06 | 2.0+08 | Jour | PR/C,89,014611 | 14 | A.Chatillon+ | 14379 |
| <i>n</i> ,fis | <i>n</i> | KE | 1USALAS | 1.0+06 | 2.0+08 | Jour | PR/C,89,014611 | 14 | A.Chatillon+ | 14379 |
| <i>n</i> ,fis | ² H | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ³ H | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁴ He | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁶ He | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁸ He | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁷ Li | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁸ Li | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁹ Li | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁹ Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ¹⁰ Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ¹¹ Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ¹⁴ C | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |

95 Americium 242

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|---------------|---------|--------|---------|-------------|--------|------|-------------------------------|------|---------------|--------|
| | | | | Min | Max | | | | | |
| <i>n</i> ,fis | Many | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |

| | | | | | | | | | | |
|---------------|------------------|----|---------|--------|--------|------|--------------|----|---------------|-----------------------|
| <i>n</i> ,fis | Many | KE | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ² H | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ³ H | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁴ He | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁶ He | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁷ Li | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁸ Li | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ⁹ Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ¹⁰ Be | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| <i>n</i> ,fis | ¹⁴ C | FY | 4RUSLIN | 2.5-02 | 2.5-02 | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |

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Californium

252

| Reaction | Product | Quant. | Lab. | Energy (eV) | | Type | Documentation Ref Vol Page | Date | Author | Data # |
|----------|---------|--------|---------|-------------|-----|------|-------------------------------|------|---------------|-----------------------|
| | | | | Min | Max | | | | | |
| 0,fis | Many | CHG | 4RUSLIN | Spont | | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |
| 0,fis | Many | FY | 4RUSLIN | Spont | | Conf | 77KIEV,3,258 | 77 | I.A.Kondurov+ | 40503 |