## $^{56}$Fe(p,$\gamma$), $^{56}$Fe(p,p'$\gamma$), IAR

| Type | Author | History Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | M. R. Bhat | NDS 85, 415 (1998) | 24-Sep-1998 |

1991El01: E=1.9− 2.5 MeV; E$\gamma$, I$\gamma$, $\gamma(\theta)$.
1986Ra19: E=1248, 1652, and 2065 keV; E$\gamma$, I$\gamma$, $\gamma(\theta)$.
1986El06: E=3774, and 3794 keV; E$\gamma$, I$\gamma$, $\gamma(\theta)$.
1985El09: E=3694− 3855 keV; E$\gamma$, I$\gamma$, $\gamma(\theta)$.
1981El05: E=1.3− 1.9 MeV, E$\gamma$, I$\gamma$, $\gamma(\theta)$.
1979Ra13: E=3.7− 3.8 MeV; E$\gamma$, I$\gamma$, $\gamma(\theta)$.
1975El01: E=1.2− 3.0 MeV; E$\gamma$, I$\gamma$, $\gamma(\theta)$.
1974Es01: E=1.2− 1.5 MeV; E$\gamma$, I$\gamma$, $\gamma(\theta)$.
Resonances and their studies may be found in the following: 1987Sh16, 1986Ra11, 1985Sh19, 1985RaZV, 1984Ra20, 1982Ar04, 1981Wa27, 1980An34, 1971Li14, 1970Br20, 1970Ar10, 1969Ky01, 1969Er04.
Others: 1978Fo20, 1970Br20, 1970Ob02, and 1966Au01.

### $^{57}$Co Levels

S(p)= 6027.5 _5_ (1985Wa02).

| E(level)[†] | J$^\pi$[‡] | (2J+1)$\Gamma_p\Gamma_\gamma/\Gamma$(eV) | Comments |
|---|---|---|---|
| S(p)+1248[#] 2 | 3/2$^{(-)}$ | 1.0 | $\Gamma_\gamma$=0.25 eV<br>J$^\pi$: 3/2 from $\gamma(\theta)$ (1986Ra19). |
| S(p)+1262[#] 2 | 3/2$^{(-)}$ | 0.74 | $\Gamma_\gamma$=0.19 eV |
| S(p)+1267[#] 2 | 3/2$^{(-)}$ | 0.90 | $\Gamma_\gamma$=0.23 eV |
| S(p)+1408[@] 3 | 5/2 | | |
| S(p)+1416[@] 3 | 5/2 | | |
| S(p)+1420[@] 3 | 5/2 | | |
| S(p)+1599 2 | 3/2$^{(-)}$ | 0.88 | $\Gamma_\gamma$=0.22 eV (1981El05) |
| S(p)+1623[&] 2 | 3/2$^{(-)}$ | 1.33 | $\Gamma_\gamma$=0.33 eV |
| S(p)+1643[&] 2 | 3/2$^{(-)}$ | 1.12 | $\Gamma_\gamma$=0.28 eV |
| S(p)+1649[&] 2 | 3/2$^{(-)}$ | 2.30 | $\Gamma_\gamma$=0.58 eV<br>J$^\pi$: 3/2 from $\gamma(\theta)$ for E(p)=1652 (1986Ra19). |
| S(p)+1932[c] 2 | 5/2 | 4.8 _12_ | $\Gamma_\gamma$=0.81 eV _20_ |
| S(p)+2060[c] 2 | (5/2$^-$) | 5.2 _12_ | $\Gamma_\gamma$=1.3 eV _3_<br>J$^\pi$: from $\gamma(\theta)$ of primary $\gamma$ rays (1991El01); however, a resonance at 2065 was assigned J=3/2 from $\gamma(\theta)$ by 1986Ra19. Data of 1991El01 give J=3/2,5/2, though J=5/2 is preferred grom $\gamma$ decay pattern. |
| S(p)+2204[c] 2 | 5/2 | 5.9 _14_ | $\Gamma_\gamma$=0.98 eV _24_ |
| S(p)+2466[c] 2 | 3/2$^{(-)}$ | 2.2 _7_ | $\Gamma_\gamma$=0.56 eV _17_ |
| S(p)+3720[a] 1 | 9/2$^{(+)}$ | 3.1 _5_ | $\Gamma_\gamma$=0.31 eV _5_ |
| S(p)+3727[a] 1 | 9/2$^{(+)}$ | 2.7 _5_ | $\Gamma_\gamma$=0.27 eV _5_ |
| S(p)+3774[b] 1 | 5/2$^{(+)}$ | 1.6 _4_ | |
| S(p)+3794[b] 1 | 5/2$^{(+)}$ | 3.3 _7_ | |

[†] The resonance energies are E(p)(lab).
[‡] From $\gamma(\theta)$ and $\pi$ from comparison of experimental $\delta$ with Weisskopf single particle estimates (1986El06).
[#] From 1975El01; split analog states of the 14 level in $^{57}$Fe.
[@] From 1974Es01: split analog states of the 136 level in $^{57}$Fe.
[&] From 1981El05; split analog states of the 367 level in $^{57}$Fe.

$$\underline{{}^{56}\textbf{Fe(p,}\gamma\textbf{)}, {}^{56}\textbf{Fe(p,p}'\gamma\textbf{)}, \textbf{IAR (continued)}}$$

$$\underline{{}^{57}\text{Co Levels (continued)}}$$

[a] From 1985El09; split analog states of the 2455 level in ${}^{57}$Fe.
[b] From 1986El06; split analog states of the 2506 level in ${}^{57}$Fe.
[c] From 1991El01.

$$\underline{{}^{56}\textbf{Fe(p,}\gamma\textbf{)}, {}^{56}\textbf{Fe(p,p}'\gamma\textbf{)}, \textbf{IAR (continued)}}$$