

Adopted Levels, Gammas

| Type | Author | History | Citation | Literature Cutoff Date |
|-----------------|------------------------------|---------|---------------------|------------------------|
| Full Evaluation | Huo Junde, Huo Su, Yang Dong | | NDS 112,1513 (2011) | 29-Oct-2009 |

Q(β⁻)=-2132.9 4; S(n)=10081.9 5; S(p)=5848.1 5; Q(α)=-7757.9 19 [2012Wa38](#)

Note: Current evaluation has used the following Q record -2136 1110083.1 215849.0 20-7758.8 27 [2003Au02](#).

⁵⁶Co Levels

E(I),J(I) From ²⁸Si(³²S,3pnγ).

Cross Reference (XREF) Flags

| | | | | | |
|----------|---|----------|---|----------|---|
| A | ⁵⁶ Ni ε decay | E | ⁵⁴ Fe(α,d) | I | ⁵⁸ Ni(p, ³ He) |
| B | ⁵⁰ Cr(¹² C,npαγ) | F | ⁵⁴ Fe(¹⁶ O, ¹⁴ N) | J | ⁵⁸ Ni(d,α), (pol d,α) |
| C | ⁵⁴ Fe(³ He,p), (³ He,pγ) | G | ⁵⁶ Fe(p,n), (p,nγ) | K | ⁵⁸ Ni(d,αγ) |
| D | ⁵⁴ Fe(α,np),(α,npγ) | H | ⁵⁶ Fe(³ He,t) | L | ²⁸ Si(³² S,3pnγ) |

| E(level) [†] | J ^π | T _{1/2} [@] | XREF | Comments |
|-----------------------|----------------|-------------------------------|-----------------------------|---|
| 0.0 | 4 ⁺ | 77.236 d 26 | ABCDEFGHIJK | %ε+%β ⁺ =100 μ= 3.85 1 (2005St24); Q=+0.25 9 (2005St24) J ^π : J=4 from atomic beam (1976Fu06) and π=+ from L=4 in ⁵⁴ Fe(α,d). T _{1/2} : from evaluation of T _{1/2} by 2004WoZZ . Others: 77.12 d 7 (1978La21), 77.12 d 10 (1977An13), 78.4 d 5 (1974Cr05), 77.2 d 8 (1954Bu58), 77.30 d 9 (1989Al24), 78.76 d 12 (1972Em01), 77.3 d 3 (1957Wr37), 77.08 d 8 (1989Le17), 77.28 d 4 (1989Sc17), and 77.29 d 3 (1990Al29), 77.210 d 28 and 77.290 d 40 (1992Fu02). |
| 158.38 3 | 3 ⁺ | <0.1 ^{&} ns | A CDEFGHIJK | XREF: F(167)I(166). J ^π : J=3 from γγ(θ) in ⁵⁶ Ni ε decay and π=+ from L(α,d)=2. |
| 576.50 7 | 5 ⁺ | 0.28 ^c ps +7-5 | BCDEFGHIJK | T _{1/2} : others: 0.33 ps +22-10 (p,nγ), 0.33 ps +22-11 (³ He,pγ). J ^π : configuration=(π 1f _{7/2})(ν 1p _{3/2})5 ⁺ . See also J=5 from γγ(θ) (¹² C,npαγ) and π=+ from L(α,d)=4. |
| 829.61 5 | 4 ⁺ | >1.7 ps | CDE GHIJK | XREF: I(840). T _{1/2} : others: >0.76 ps (p,nγ), >1.4 ps (d,αγ). J ^π : J=4 from γ(θ) of 671γ to 3 ⁺ 158 in ⁵⁴ Fe(α,npγ) and π=+ from L(p, ³ He)=4. |
| 970.23 4 | 2 ⁺ | 0.12 ps +12-6 | A CDE GHIJK | XREF: I(961). T _{1/2} : others: 0.076 ps +21-14 (p,nγ), <0.1 ns in ⁵⁶ Ni ε decay, and 0.139 ps +31-24 (d,αγ). J ^π : J=2 from pγ(θ) of 812γ to 3 ⁺ 158 in ⁵⁴ Fe(³ He,pγ) and π=+ from L(³ He,p)=2. |
| 1009.13 7 | 5 ⁺ | 0.38 ^c ps +14-9 | CDE GHIJK | XREF: I(1001). T _{1/2} : others: 0.44 ps +25-12 in ⁵⁶ Fe(p,nγ), 0.27 ps +18-9 in ⁵⁴ Fe(³ He,pγ). J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(d,α)=4. |
| 1114.51 5 | 3 ⁺ | 0.19 ps +9-6 | C E GHIJK | XREF: I(1106). T _{1/2} : others: 0.24 ps +4-2 (³ He,pγ), 0.139 ps +28-24 (d,αγ). J ^π : J=3 from ⁵⁶ Fe(p,n), (p,nγ). M1+E2 γ to 4 ⁺ . |
| 1450.68 4 | 0 ⁺ | 1.58 ^{&} ns 6 | A C GHIJK | XREF: I(1444). E(level): anti-analog state of 0 ⁺ g.s. in ⁵⁶ Fe in ⁵⁶ Fe(p,n), (p,nγ). T _{1/2} : others: >2.0 ps (³ He,pγ), >0.4 ps (p,nγ). J ^π : J=0 from γγ(θ) in ⁵⁶ Ni ε decay, π=+ from L(p, ³ He)=0. |
| 1585 10 | | | C | |

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Adopted Levels, Gammas (continued)

⁵⁶Co Levels (continued)

| E(level) [†] | J ^π | T _{1/2} [@] | XREF | Comments |
|-----------------------|--|-------------------------------|-------------|---|
| 1720.18 4 | 1 ⁺ | 0.34 ^b ps +35-12 | A C E GHIJK | XREF: I(1714). T _{1/2} : others: 0.47 ps +40-16 (³ He,pγ), 0.31 ps +38-13 (d,αγ). J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(d,α)=0. |
| 1930.36 16 | 3 ⁺ | 33 ^c fs +8-7 | C E GHIJK | XREF: I(1924). J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(d,α)=2. |
| 2060.00 15 | 2 ⁺ | 24 ^c fs 6 | C E GHIJK | XREF: I(2050). J ^π : π=+ from L=2 in ⁵⁴ Fe(α,d); pγ(θ)'s in ⁵⁴ Fe(³ He,pγ) gives J=2,(3); 670γ from 1 ⁺ 2730 is mult=D based on comparison with RUL, D from 1 ⁺ 2730 rules out J=(3). |
| 2224.87 15 | 2 ⁺ | | C GHIJ | XREF: I(2220). J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(d,α)=2. |
| 2282.63 12 | 7 ⁺ | >1.25 ^c ps | B D HIJK | XREF: I(2271). T _{1/2} : other: >1.4 ps in (α,npγ). J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(d,α)=6. |
| 2290.1? 3 | | | C GH | |
| 2306.13 21 | (2 ⁺) | | C E G J | XREF: E(2300)J(2301). J ^π : from tensor analyzing power in ⁵⁸ Ni(pol d,α) and L(α,d)=L(³ He,p)=2. |
| 2357.4 3 | 1 ⁺ | | C G J | J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(d,α)=0. |
| 2371.83 20 | 6 ⁺ | 42 ^a fs 21 | DE IJ | J ^π : J=6 from γ(θ) of 1795γ to 5 ⁺ 576 in ⁵⁴ Fe(α,npγ) and π=+ from L(α,d)=6. |
| 2456? | 0 ⁺ ,1 ⁺ | | I | J ^π : L(p, ³ He)=0(+2). |
| 2469.6 6 | | 16 ^c fs 9 | C E G JK | |
| 2609.5 7 | 3 ⁺ | | G J | J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(d,α)=2. |
| 2635.64 19 | 1 ⁺ | 14 ^c fs 8 | C GHIJK | XREF: I(2626). T _{1/2} : other: 15 fs +19-11 in ⁵⁴ Fe(³ He,pγ). J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(p, ³ He)=2. |
| 2647.2 7 | (0 ⁺ ,1 ⁺) | | G J | J ^π : L(d,α)=(0). |
| 2665.1 7 | (3 ⁺) | | G J | J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(d,α)=(2). |
| 2729.89 15 | 1 ⁺ | 69 ^c fs +21-17 | C E GHIJK | T=1 T is from ⁵⁶ Fe(p,n), ⁵⁸ Ni(p, ³ He). T _{1/2} : other: 67 fs +33-19 (³ He,pγ). J ^π : from analyzing power and L(d,α)=0. |
| 2770 5 | | | J | |
| 2789 5 | | | E J | |
| 2926 5 | (2 ⁺) | | IJ | XREF: I(2946). J ^π : from analyzing power and partially resolved doublet for 2926 and 2969 levels in ⁵⁸ Ni(pol d,α), and L(³ He,p)=2. |
| 2969 5 | 2 ⁺ | | C H J | J ^π : from L(³ He,t)=2 and analyzing power in ⁵⁸ Ni(pol d,α). |
| 3048 5 | 3 ⁺ ,4 ⁺ ,5 ⁺ | | IJ | J ^π : L(p, ³ He)=4. |
| 3060 5 | 5 ⁺ | | H J | J ^π : from analyzing power and L(d,α)=4. |
| 3075.91 22 | 1 ⁺ | 22 fs +8-6 | C E J | XREF: E(3070). J ^π : J=1 from pγ(θ) of 1625γ to 0 ⁺ 1450 in ⁵⁴ Fe(³ He,pγ) and π=+ from L(d,α)=2. |
| 3140 5 | 3 ⁺ | | IJ | J ^π : from analyzing power and L(d,α)=2. |
| 3180 5 | 1 ⁺ ,3 ⁺ | | C E H J | XREF: H(3177). J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(³ He,p)=2. |
| 3234 5 | (0 ⁺) | | J | J ^π : from L(d,α)=(0) and analyzing power in (pol d,α). |
| 3255 5 | | | J | |
| 3297 5 | 4 ⁺ | | H J | XREF: H(3300). J ^π : from analyzing power and L(d,α)=4. |
| 3366 5 | (-) | | H J | XREF: H(3362). |

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Adopted Levels, Gammas (continued) ^{56}Co Levels (continued)

| E(level) [†] | J ^π | T _{1/2} [@] | XREF | Comments |
|-----------------------|--|-------------------------------|--------|--|
| 3378 [‡] 10 | 1 ⁺ | | C | J ^π : L(d,α)=(3). |
| 3382 5 | 2 ⁺ | | IJ | J ^π : L(³ He,p)=0+2. XREF: I(3396). |
| 3436 5 | 0 ⁺ ,1 ⁺ | | H J | J ^π : from analyzing power in ⁵⁸ Ni(pol d,α) and L(p, ³ He)=2. XREF: H(3423). |
| 3493 5 | | | H J | J ^π : L(d,α)=0. |
| 3510 11 | (0 ⁺) | | G IJ | XREF: H(3489). XREF: I(3501). |
| 3526.6 5 | 0 ⁺ | 6 fs 5 | C J | E(level),J ^π : IAS of 0 ⁺ g.s. in ⁵⁶ Fe in ⁵⁶ Fe(p,n). |
| 3544 11 | 7 ⁺ | | H J | J ^π : from L=0 in ⁵⁶ Fe(³ He,t) and analyzing power in ⁵⁸ Ni(pol d,α). J ^π : based on vector-analyzing power angular distribution in ⁵⁸ Ni(pol d,α). |
| 3570 [‡] # | | | E | |
| 3592 12 | (0 ⁺) | | E GHIJ | E(level),J ^π : IAS of 0 ⁺ g.s. in ⁵⁶ Fe in ⁵⁶ Fe(³ He,t). T=2. T is from ⁵⁶ Fe(p,n), ⁵⁸ Ni(p, ³ He). |
| 3598.64 23 | 0 ⁺ ,1 ⁺ | 18 fs 5 | C H J | J ^π : L(³ He,p)=0. |
| 3610 5 | | | J | |
| 3638.11 16 | 8 ⁺ | 55 ^a fs +28-12 | D | J ^π : γ(θ) of M1+E2 1355γ to 7 ⁺ 2283 in ⁵⁴ Fe(α,npγ). |
| 3642? 11 | (-) | | J | J ^π : L(d,α)=(3). |
| 3694 12 | | | H | |
| 3717 5 | (-) | | J | J ^π : L(d,α)=(3). |
| 3798 11 | (+) | | E J | XREF: E(3790). J ^π : L(d,α)=(6). |
| 3807 [‡] 10 | 1 ⁺ ,2 ⁺ ,3 ⁺ | | C J | XREF: J(3815). J ^π : L(³ He,p)=2. |
| 3863 [‡] 12 | | | C J | J ^π : L(d,α)=(3,4). |
| 3876 12 | (+) | | J | J ^π : L(d,α)=(2). |
| 3900 12 | | | J | |
| 3935 12 | | | J | |
| 3960 12 | | | J | |
| 4011 12 | 3 ⁺ ,4 ⁺ ,5 ⁺ | | J | J ^π : L(d,α)=4. |
| 4019 12 | | | J | |
| 4032 10 | 1 ⁺ ,2 ⁺ ,3 ⁺ | | C E J | XREF: E(4040). J ^π : L(³ He,p)=2. |
| 4062 12 | | | J | |
| 4094 12 | | | J | |
| 4139 12 | 3 ⁺ ,4 ⁺ ,5 ⁺ | | J | J ^π : L(d,α)=4. |
| 4180.16 18 | 9 ⁺ | 0.41 ^a ps 4 | BCD J | J ^π : J=9 from γ(θ) of 1898γ and σ(E) in ⁵⁴ Fe(α,npγ). |
| 4183 [‡] 10 | (+) | | C J | J ^π : L(d,α)=(2). |
| 4209 13 | | | J | |
| 4222 13 | | | J | |
| 4281 13 | | | J | |
| 4293 13 | | | J | |
| 4308 13 | | | H J | XREF: H(4300). |
| 4349 13 | | | J | |
| 4372 3 | 1 ⁺ | 10 fs +12-8 | C | J ^π : L(³ He,p)=0+2. |
| 4388 13 | 1 ⁺ ,2 ⁺ ,3 ⁺ | | J | J ^π : L(d,α)=2. |
| 4429 3 | (2 ⁺) | | C G I | T=2 |
| 4441 13 | 7 ⁺ | | C J | E(level),J ^π : IAS of 2 ⁺ 847 in ⁵⁶ Fe in ⁵⁶ Fe(p,n). |
| 4453 13 | | | J | J ^π : L=6 and vector-analyzing power in ⁵⁸ Ni(pol d,α). |
| 4501 14 | | | J | |

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Adopted Levels, Gammas (continued) ^{56}Co Levels (continued)

| E(level) [†] | J ^π | T _{1/2} [@] | XREF | Comments |
|------------------------|--|-------------------------------|-------|--|
| 4531 14 | | | J | |
| 4560 14 | | | J | |
| 4684 14 | | | J | |
| 4743 14 | | | J | |
| 4768 14 | | | J | |
| 4796 10 | | | C | |
| 4846 15 | | | J | |
| 4928 15 | | | J | |
| 4992 [‡] 10 | 8 ⁻ | | C E J | J ^π : π=- from L=7 and J=8 from DWBA, configuration=((π 1f _{7/2})(ν 1g _{9/2}))8 ⁻ (1994Fi01) in $^{54}\text{Fe}(\alpha, d)$. |
| 5008 15 | | | J | |
| 5081 [‡] 10 | | | C IJ | |
| 5146 15 | 5 ⁺ | | J | J ^π : L=4 and vector-analyzing power in $^{58}\text{Ni}(\text{pol } d, \alpha)$. |
| 5187? | 1 ⁺ , 2 ⁺ , 3 ⁺ | | I | J ^π : L(p, ^3He)=2. E(level): From $^{58}\text{Ni}(p, ^3\text{He})$. |
| 5239 [‡] 10 | | | C J | |
| 5274.57 20 | 10 ⁺ | 42 ^a fs +28-14 | D | J ^π : γ(θ) of M1+E2 1094γ to 9 ⁺ 4180 in $^{54}\text{Fe}(\alpha, n\text{p}\gamma)$. |
| 5338 3 | | ≤8 fs | C E | |
| 5430 [#] | 6 ⁻ | | EF H | XREF: F(5400)H(5400). E(level): from $^{54}\text{Fe}(\alpha, d)$. J ^π : configuration=((π p _{3/2})(ν g _{9/2}))6 ⁻ (1994Fi01) in $^{54}\text{Fe}(\alpha, d)$. |
| 5472.3 20 | 1 ⁽⁺⁾ , (2 ⁺) | 7 fs +4-3 | C | J ^π : J=1, (2) from pγ(θ) of 3752γ to 1 ⁺ 1720; mult(3752γ)=D, E2; probably π=(+). |
| 5500 [#] 80 | | | E | |
| 5562 [‡] 10 | 1 ⁺ , 2 ⁺ , 3 ⁺ | | C | J ^π : L($^3\text{He}, p$)=2. |
| ≈5620 | | | J | |
| 6069 [‡] 10 | | | C J | XREF: J(6080). |
| 6228 [‡] 10 | | | C | |
| 6319 [‡] 10 | (0 ⁺ , 1 ⁺) | | C | J ^π : L($^3\text{He}, p$)=(0). |
| 6545 [‡] 10 | | | C F | XREF: F(6500). |
| 6570 [#] | 6 ⁻ | | E | J ^π : configuration=((π g _{9/2})(ν p _{3/2}))6 ⁻ (1994Fi01) in $^{54}\text{Fe}(\alpha, d)$. |
| ≈6850 | | | J | |
| 7350 [#] | | | E | |
| ≈7480 | | | J | |
| ≈7870 | | | J | |
| 8920 [#] 30 | 9 ⁺ | | EF | XREF: F(8900). J ^π : configuration=((π g _{9/2})(ν g _{9/2}))9 ⁺ (1994Fi01) in $^{54}\text{Fe}(\alpha, d)$. |
| 10.3×10 ³ | (12) | | L | |
| 11.802×10 ³ | (14) | | L | |
| 13.650×10 ³ | (16) | | F L | XREF: F(13700). |
| 15.895×10 ³ | (18) | | L | |
| 18.6×10 ³ | (20) | | L | |

[†] For states connected by γ's, E(level) are from Ey and scheme by using least-squares adjustment procedure; the others are from $^{58}\text{Ni}(d, \alpha)$, (pol d, α), except as noted.

[‡] From $^{54}\text{Fe}(\mathbf{^3He}, p)$, ($^3\text{He}, p\gamma$).

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Adopted Levels, Gammas (continued) **^{56}Co Levels (continued)**

- # From $^{54}\text{Fe}(\alpha, d)$.
- @ From $^{54}\text{Fe}({}^3\text{He}, p\gamma)$, DSA method, except as noted.
- & From $\gamma\gamma(t)$ in ^{56}Ni ε decay.
- a* From $^{54}\text{Fe}(\alpha, n\text{p}\gamma)$, DSA method.
- b* From $^{56}\text{Fe}(p, n\gamma)$, DSA method.
- c* From $^{58}\text{Ni}(d, \alpha\gamma)$, DSA method.

Adopted Levels, Gammas (continued) $\gamma(^{56}\text{Co})$ Unplaced γ 's are from $^{56}\text{Fe}(p,n\gamma)$, except as noted.

| $E_i(\text{level})$ | J_i^π | E_γ^\dagger | I_γ^\ddagger | E_f | J_f^π | Mult.# | $\delta^\#$ | α^c | Comments |
|---------------------|----------------|--|---|--|----------------|----------------|--------------------|------------|--|
| 158.38 | 3 ⁺ | 158.38@ 3 | 100@ | 0.0 | 4 ⁺ | M1+E2@ | +0.016@ 6 | 0.01253 | $\alpha(\text{K})=0.01107$; $\alpha(\text{L})=0.00110$ B(M1)(W.u.)>0.055; B(E2)(W.u.)>0.28 δ : others: +0.27 4 ($\alpha,n\gamma$), +0.023 17 (p,n γ). |
| 576.50 | 5 ⁺ | 576.47 ^a 8 | 100 ^a | 0.0 | 4 ⁺ | M1+E2& | -0.16& 6 | | B(M1)(W.u.)=0.400 8; B(E2)(W.u.)=6.E+1 5 δ : others: -0.055 15 (p,n γ), 0.00 5 ($^{12}\text{C},n\alpha\gamma$). |
| 829.61 | 4 ⁺ | 253.05 ^a 11 671.18 ^a 8 | 2.0 ^a 3 100 ^a 2 | 576.50 5 ⁺ 158.38 3 ⁺ | | M1+E2& | -0.09& 12 | | B(M1)(W.u.)<0.032; B(E2)(W.u.)<4.1 δ : other: -0.25 3 in $^{56}\text{Fe}(p,n\gamma)$. |
| | | 829.60 ^a 8 | 34 ^a 2 | 0.0 | 4 ⁺ | M1+E2 | -0.43 28 | | B(M1)(W.u.)<0.0058; B(E2)(W.u.)<5.5 δ : may be incorrect due to large background corrections. |
| 970.23 | 2 ⁺ | 811.85@ 3 | 100@ 1 | 158.38 3 ⁺ | | M1(+E2)@ | -0.02@ 2 | | B(M1)(W.u.)=(0.3418 3); B(E2)(W.u.)=(0.4 +9-4) δ : other: -0.025 15 in $^{56}\text{Fe}(p,n\gamma)$. |
| 1009.13 | 5 ⁺ | 970.4 ^a 2 179.50 ^a 11 432.5 ^a 2 | 0.30 ^a 5 6.0 ^a 7 7.1 ^a 9 | 0.0 4 ⁺ 829.61 4 ⁺ 576.50 5 ⁺ | | | | | |
| 1114.51 | 3 ⁺ | 1009.14 ^a 8 284.86 ^a 10 | 100 ^a 10 13.1 ^a 12 | 0.0 4 ⁺ 829.61 4 ⁺ | | M1+E2 M1+E2 | -0.10 5 -0.05 3 | 0.00293 3 | B(M1)(W.u.)=0.0494 5; B(E2)(W.u.)=1.0 10 $\alpha(\text{K})=0.00259 3$; $\alpha(\text{L})=0.00026$ B(M1)(W.u.)=0.5514 17; B(E2)(W.u.)=3.E+1 +5-3 B(M1)(W.u.)= 0.0032 16; B(E2)(W.u.)=7 4 B(M1)(W.u.)=0.0700 3; B(E2)(W.u.)=0.8 5 |
| 1450.68 | 0 ⁺ | 956.14 ^a 8 1114.47 ^a 8 | 5.7 ^a 4 100.0 ^a 14 | 158.38 3 ⁺ 0.0 4 ⁺ | | M1+E2 E2@ | +0.085 25 | 0.00175 | $\alpha(\text{K})=0.00155$; $\alpha(\text{L})=0.00015$ B(E2)(W.u.)=1.10 5 |
| 1720.18 | 1 ⁺ | 480.44@ 2 | 100@ | 970.23 2 ⁺ | | | | | |
| | | 269.50@ 2 | 73.7@ 16 | 1450.68 0 ⁺ | | M1@ | | 0.00332 | $\alpha(\text{K})=0.00294$; $\alpha(\text{L})=0.00029$ B(M1)(W.u.)=1.2 +5-12 |
| | | 749.95@ 3 | 100@ 3 | 970.23 2 ⁺ | | M1(+E2)@ | 0.00@ 3 | | B(M1)(W.u.)=(0.08 +3-8) δ : other: -0.10 15 in $^{56}\text{Fe}(p,n\gamma)$. |
| | | 1561.80@ 5 | 28.3@ 12 | 158.38 3 ⁺ | | E2@ | | | B(E2)(W.u.)=2.0 +7-20 |
| 1930.36 | 3 ⁺ | 960.3 2 1099.6 4 1772.2 3 | 100 12 21.2 58 71.2 77 | 970.23 2 ⁺ 829.61 4 ⁺ 158.38 3 ⁺ | | | | | |
| 2060.00 | 2 ⁺ | 945.6 2 1089.3 5 1901.9 5 | 100 15 28.3 57 60.4 94 | 1114.51 3 ⁺ 970.23 2 ⁺ 158.38 3 ⁺ | | | | | |
| 2224.87 | 2 ⁺ | 1110.0 ^a 2 1254.4 ^a 3 | | 1114.51 3 ⁺ 970.23 2 ⁺ | | | | | |

Adopted Levels, Gammas (continued)

γ(⁵⁶Co) (continued)

| <u>E_i(level)</u> | <u>J_i^π</u> | <u>E_γ[†]</u> | <u>I_γ[‡]</u> | <u>E_f</u> | <u>J_f^π</u> | <u>Mult.#</u> | <u>δ[#]</u> | <u>Comments</u> |
|-----------------------------|-------------------------------------|----------------------------------|----------------------------------|------------------------|----------------------------------|------------------------|--------------------------|--|
| 2224.87 | 2 ⁺ | 2066.1 ^a 4 | | 158.38 | 3 ⁺ | | | |
| 2282.63 | 7 ⁺ | 1706.1 ^{&} 1 | 100 ^{&} | 576.50 | 5 ⁺ | E2 ^{&} | | B(E2)(W.u.)<2.5 |
| 2290.1? | | 1319.8 5 | 53 11 | 970.23 | 2 ⁺ | | | |
| | | 2131.7 6 | 69 18 | 158.38 | 3 ⁺ | | | |
| | | 2290.4 8 | 100 20 | 0.0 | 4 ⁺ | | | |
| 2306.13 | (2) ⁺ | 1336.4 5 | 61 12 | 970.23 | 2 ⁺ | | | |
| | | 2148.2 6 | 100 20 | 158.38 | 3 ⁺ | | | |
| | | 2306.1 8 | 35 12 | 0.0 | 4 ⁺ | | | |
| 2357.4 | 1 ⁺ | 1387.3 ^a 3 | | 970.23 | 2 ⁺ | | | |
| | | 2198.7 ^a 5 | | 158.38 | 3 ⁺ | | | |
| 2371.83 | 6 ⁺ | 1362.0 ^{&} 5 | 39 ^{&} 4 | 1009.13 | 5 ⁺ | | | |
| | | 1795.4 ^{&} 2 | 100 ^{&} 8 | 576.50 | 5 ⁺ | M1+E2 ^{&} | +0.03 ^{&} 5 | B(M1)(W.u.)=0.07 4; B(E2)(W.u.)=0.04 +13-4 |
| 2469.6 | | 1893.1 6 | | 576.50 | 5 ⁺ | | | |
| 2609.5 | 3 ⁺ | 2451.1 ^a 7 | | 158.38 | 3 ⁺ | | | |
| 2635.64 | 1 ⁺ | 1184.9 ^a 2 | | 1450.68 | 0 ⁺ | | | |
| 2647.2 | (0 ⁺ ,1 ⁺) | 2488.8 ^a 7 | | 158.38 | 3 ⁺ | | | |
| 2665.1 | (3 ⁺) | 2506.7 ^a 7 | | 158.38 | 3 ⁺ | | | |
| 2729.89 | 1 ⁺ | 423.9 2 | 42.4 91 | 2306.13 | (2) ⁺ | | | |
| | | 503.8 3 | 42.4 91 | 2224.87 | 2 ⁺ | | | |
| | | 670.2 3 | 76 18 | 2060.00 | 2 ⁺ | | | |
| | | 1279.7 4 | 42 12 | 1450.68 | 0 ⁺ | | | |
| | | 1760.1 3 | 100 15 | 970.23 | 2 ⁺ | | | |
| 3075.91 | 1 ⁺ | 1015.8 3 | 24 4 | 2060.00 | 2 ⁺ | | | |
| | | 1625.2 3 | 100 4 | 1450.68 | 0 ⁺ | | | |
| | | 2106.4 8 | 9 4 | 970.23 | 2 ⁺ | | | |
| 3526.6 | 0 ⁺ | 1806.4 5 | | 1720.18 | 1 ⁺ | | | |
| 3598.64 | 0 ⁺ ,1 ⁺ | 868.9 3 | 63 8 | 2729.89 | 1 ⁺ | | | |
| | | 962.9 3 | 33 6 | 2635.64 | 1 ⁺ | | | |
| | | 1878.2 6 | 100 6 | 1720.18 | 1 ⁺ | | | |
| 3638.11 | 8 ⁺ | 1355.4 ^{&} 1 | 100 ^{&} | 2282.63 | 7 ⁺ | M1+E2 ^{&} | +0.15 ^{&} 4 | B(M1)(W.u.)=0.1573 19; B(E2)(W.u.)=3.9 21 |
| 4180.16 | 9 ⁺ | 542.0 ^{&} 1 | 37 ^{&} 1 | 3638.11 | 8 ⁺ | M1+E2 ^{&} | +0.05 ^{&} 9 | B(M1)(W.u.)=0.091 10; B(E2)(W.u.)=1.6 +57-16 |
| | | 1898.0 ^{&} 3 | 100 ^{&} 4 | 2282.63 | 7 ⁺ | E2 ^{&} | | B(E2)(W.u.)=3.2 4 |
| 4372 | 1 ⁺ | 2652 3 | | 1720.18 | 1 ⁺ | | | |
| 4429 | (2) ⁺ | 2978 3 | | 1450.68 | 0 ⁺ | | | |
| 5274.57 | 10 ⁺ | 1094.4 ^{&} 1 | 100 ^{&} | 4180.16 | 9 ⁺ | M1+E2 ^{&} | +0.13 ^{&} 5 | B(M1)(W.u.)=0.393 5; B(E2)(W.u.)=11 9 |
| 5338 | | 3048 3 | | 2290.1? | | | | |
| 5472.3 | 1 ⁽⁺⁾ ,(2 ⁺) | 3752 2 | | 1720.18 | 1 ⁺ | D,E2 | | Mult.: from RUL. |
| 11.802×10 ³ | (14) | 1502 ^b | | 10.3×10 ³ | (12) | | | |
| 13.650×10 ³ | (16) | 1848 ^b | | 11.802×10 ³ | (14) | | | |

Adopted Levels, Gammas (continued)

$\gamma(^{56}\text{Co})$ (continued)

| $E_i(\text{level})$ | J_i^π | E_γ^\dagger | E_f | J_f^π |
|----------------------|-----------|--------------------|----------------------|-----------|
| 15.895×10^3 | (18) | 2245 ^b | 13.650×10^3 | (16) |
| 18.6×10^3 | (20) | 2667 ^{bd} | 15.895×10^3 | (18) |

[†] From $^{54}\text{Fe}(^3\text{He},p\gamma)$, except as noted.

[‡] Relative photon branching from each level renormalized to 100 for the strongest branching. Values from $^{54}\text{Fe}(^3\text{He},p\gamma)$, except as noted.

[#] From $^{56}\text{Fe}(p,n\gamma)$, except as noted.

[@] From ^{56}Ni ε decay.

[&] From $^{54}\text{Fe}(\alpha,n\text{p}\gamma)$.

^a From $^{56}\text{Fe}(p,n\gamma)$.

^b From $^{28}\text{Si}(^{32}\text{S},3\text{p}\text{n}\gamma)$.

^c Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

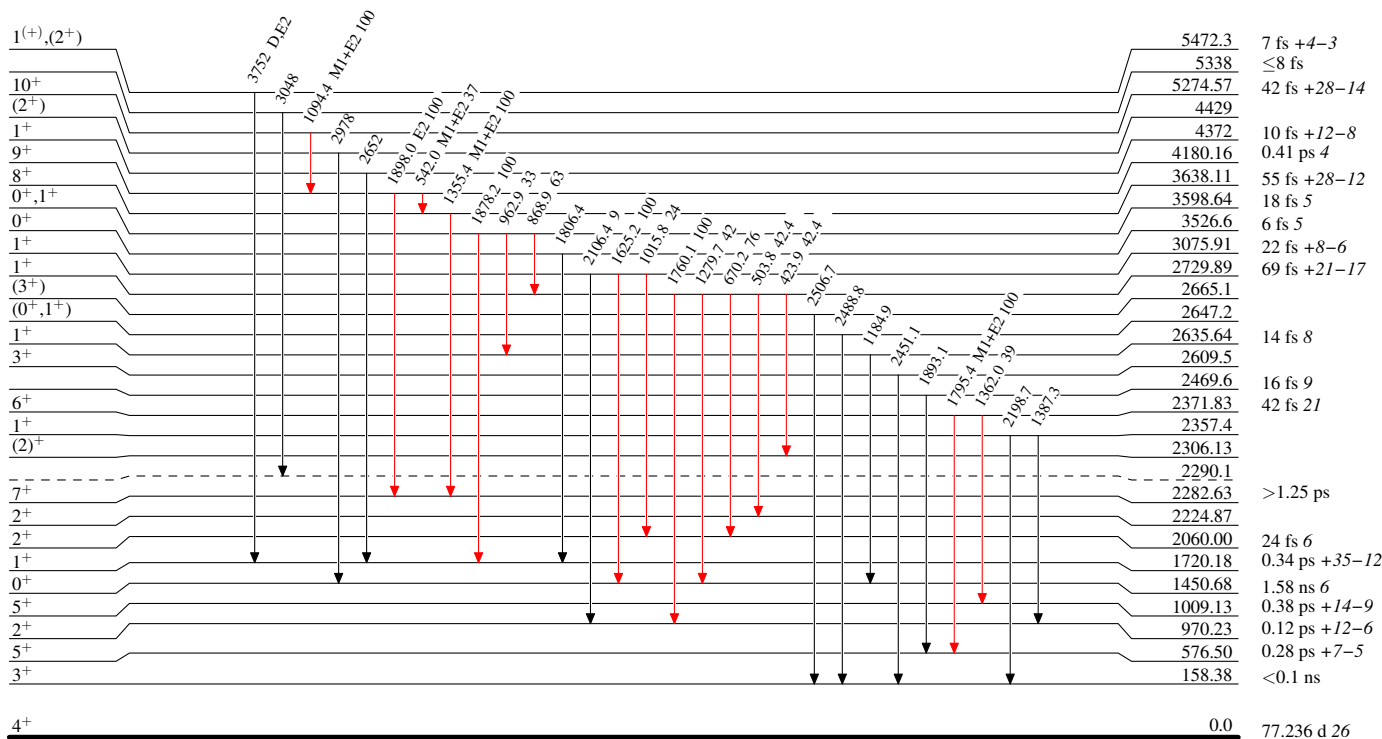
^d Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme
 Intensities: Type not specified

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- - - - - → γ Decay (Uncertain)



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$

