

Adopted Levels, Gammas

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	G. Gürdal, E. A. Mccutchan	NDS 136, 1 (2016)	1-Jul-2016

$Q(\beta^-) = -10504$ 15; $S(n) = 13566.5$ 22; $S(p) = 6.11 \times 10^3$ 3; $Q(\alpha) = -2748$ 3 2012Wa38
 $S(2n) = 23883.1$ 17, $S(2p) = 9529.0$ 25 (2012Wa38).

 ^{70}Se LevelsCross Reference (XREF) Flags

A	^{70}Br ε decay (79.1 ms)	E	$^{40}\text{Ca}(^{36}\text{Ar}, \alpha 2p\gamma)$, $^{58}\text{Ni}(^{14}\text{N}, p\eta\gamma)$
B	^{70}Br ε decay (2.2 s)	F	$^{58}\text{Ni}(^{14}\text{N}, p\eta\gamma)$, $^{60}\text{Ni}(^{12}\text{C}, 2n\gamma)$
C	$^9\text{Be}(^{70}\text{Se}, ^{70}\text{Se}'\gamma)$	G	Coulomb excitation
D	$^{40}\text{Ca}(^{40}\text{Ca}, 2\alpha 2p\gamma)$		

E(level) [†]	J ^π	T _{1/2} [‡]	XREF	Comments
0.0 ^{&}	0 ⁺	41.1 min 3	ABCDEF	$\% \varepsilon + \% \beta^+ = 100$ T _{1/2} : from 1974Te04.
944.52 ^{&} 5	2 ⁺	2.23 ps 14	BCDEF	Q = + (2007Hu03) T _{1/2} : from weighted average of 2.27 ps 26 (2014Ni09) and 2.22 ps 14 (2008Lj01) using recoil distance Doppler shift method. Others: 1.0 ps 2 from recoil distance Doppler shift method (1986He17) and 1.1 ps 3 (1975GuYV). J ^π : from 944.51γ E2 to 0 ⁺ . Q: from nuclear reorientation effect in Coulomb excitation (2007Hu03).
1599.9 ^a 3	2 ⁺	3.3 [#] ps 9	BCDEF	T _{1/2} : Other: < 5.2 ps effective half-life from recoil distance Doppler shift method (2014Ni09). J ^π : from 1600.1γ E2 to 0 ⁺ .
2010.3 3	(0 ⁺)		EF	J ^π : (0 ⁺) from 1065.8γ Q to 2 ⁺ in 1981Ah03. Authors tentatively assigned (0 ⁺) for this level based on isotropic angular distribution. Other: (0 ⁺) in 1980Wa19, based on the isotropic angular distribution.
2038.8 ^{&} 5	4 ⁺	0.97 ps 7	BCDEF	T _{1/2} : Others: < 3.3 ps, effective half-life from recoil distance Doppler shift method (2014Ni09) and 1.0 ps (1986He17) using recoil distance Doppler shift method deduced from singles data and 2.3 ps 6 (1975GuYV). J ^π : from 1094.4γ E2 to 2 ⁺ ; assumed E2 cascade member.
2382.5 ^a 4	4 ⁺	<12 [@] ps	B DEF	J ^π : from 782.6γ E2 to 2 ⁺ ; 1438.1γ E2 to 2 ⁺ ; assumed E2 cascade member.
2518.6 6	3 ⁽⁻⁾	<1.7 ps	CDEF	T _{1/2} : upper limit from effective half-life of 1.29 ps 40 from recoil distance Doppler shift method (2014Ni09). Other: 4.2 ps 6 using recoil distance Doppler shift method (1986He17) using singles data. J ^π : from 1574.1γ D to 2 ⁺ ; 868.8γ from 5 ⁻ .
2553.1 10			E	J ^π : (4 ⁺) proposed in $^{40}\text{Ca}(^{36}\text{Ar}, \alpha 2p\gamma)$, $^{58}\text{Ni}(^{14}\text{N}, p\eta\gamma)$.
3003.2 ^{&} 5	6 ⁺	1.32 ps 21	B DEF	T _{1/2} : other: 2.7 ps 6 from recoil distance Doppler shift method, deduced using singles (1986He17). J ^π : from 964.39γ E2 to 4 ⁺ ; assumed E2 cascade member.
3139.6 3			F	
3218.4 ^a 6	(6 ⁺)		D	J ^π : from 835.9γ to 4 ⁺ ; assumed E2 cascade member.
3356.4 11			E	
3387.4 5	5 ⁻	6.1 [#] ps 17	DEF	J ^π : from 528γ E2 from 7 ⁻ , 1348.6γ to 4 ⁺ .
3524.1 6	(5 ⁻)	<9 [@] ps	DEF	J ^π : from 1005.5γ (E2) to 3 ⁽⁻⁾ ; 1485.2γ (E1) to 4 ⁺ . Other: (4) in 1981Ah03.
3644 10			B DE	J ^π : (6 ⁺) proposed in $^{40}\text{Ca}(^{36}\text{Ar}, \alpha 2p\gamma)$, $^{58}\text{Ni}(^{14}\text{N}, p\eta\gamma)$.
3788.9 6	(6 ⁻)		DEF	J ^π : J from D+Q 264.8γ to (5 ⁻), π from systematics in 1980Wa19. Other: (5) in 1981Ah03.
3915.4 ^c 5	7 ⁻	<15 [@] ps	B DEF	J ^π : from 912.2γ E1 to 6 ⁺ , 691.5γ from 8 ⁺ .
4037.6 ^{&} 5	8 ⁺	<4 [@] ps	B DEF	J ^π : from 1034.4γ E2 to 6 ⁺ ; assumed E2 cascade member.

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Adopted Levels, Gammas (continued) ^{70}Se Levels (continued)

E(level) [†]	J ^π	T _{1/2} [‡]	XREF	Comments
4187.4 ^a 8	(8 ⁺)		D	J ^π : from 969.0γ to (6 ⁺); assumed E2 cascade member.
4324.5 9			E	
4410.7 6			DE	
4607.0 ^b 6	8 ⁺		B DE	J ^π : (8,9 ⁺) from R(DCO) in $^{40}\text{Ca}(^{36}\text{Ar},\alpha 2p\gamma), ^{58}\text{Ni}(^{14}\text{N},pn\gamma)$, 1603.7γ to 6 ⁺ .
4896.7 ^d 6	(9 ⁻)		DE	J ^π : from 981.3γ to 7 ⁻ ; 468.0γ to (8 ⁻); assumed E2 cascade member.
4955.0 12			B E	J ^π : (9) from 348.0γ to 8 ⁺ suggested in ε decay (2000Pi15) but the placement of the γ transition is uncertain.
5205.8 ^{&} 5	(10 ⁺)		B DE	J ^π : from 1168.12γ to 8 ⁺ ; assumed E2 cascade member.
5209.1 ^c 6	(9 ⁻)		DE	J ^π : from 1293.6γ to 7 ⁻ ; assumed E2 cascade member.
5308.1 ^a 10	(10 ⁺)		D	J ^π : from 1120γ to (8 ⁺); assumed E2 cascade member.
5693.2 ^b 6	(10 ⁺)		B DE	J ^π : from 1086.2γ to 8 ⁺ ; assumed E2 cascade member.
5805.5 ^d 6	(11 ⁻)		DE	J ^π : from 908.7γ to (9 ⁻); assumed E2 cascade member.
6017.0 15			B E	
6490.0 ^c 6	(11 ⁻)		DE	J ^π : from 1280.9γ to (9 ⁻); assumed E2 cascade member.
6510.2 ^{&} 5	(12 ⁺)		DE	J ^π : from 1304.45γ to (10 ⁺); assumed E2 cascade member.
6602 ^a 5	(12 ⁺)		D	J ^π : from 1294γ to (10 ⁺); assumed E2 cascade member.
6873.0 ^d 6	(13 ⁻)		DE	J ^π : from 1967.5γ to (11 ⁻); assumed E2 cascade member.
6956.9 ^b 6	(12 ⁺)		DE	J ^π : from 1263.6γ to (10 ⁺); assumed E2 cascade member.
7305.8 9	(13 ⁻)	1.6 ns 2	E	T _{1/2} : quoted by 1989My01; generalized centroid-shift method. J ^π : from 796.5γ to 12 ⁺ ; 348.0γ to (12 ⁺); proposed based on Weisskopf estimates in 1989My01.
7554.0 ^c 7	(13 ⁻)		D	J ^π : from 1064.0γ to (11 ⁻); assumed E2 cascade member.
7940.8 ^{&} 5	(14 ⁺)		DE	J ^π : from 1430.6γ to 12 ⁺ ; assumed E2 cascade member.
8017.7 ^d 7	(15 ⁻)		D	J ^π : from 1144.7γ to (13 ⁻); assumed E2 cascade member.
8029 ^a 5	(14 ⁺)		D	J ^π : from 1427.2γ to (12 ⁺); assumed E2 cascade member.
8316.3 ^b 6	(14 ⁺)		D	J ^π : from 1359.4γ to (12 ⁺); assumed E2 cascade member.
8349.5 13			E	
8771.8 ^c 8	(15 ⁻)		D	J ^π : from 1217.8γ to (13 ⁻); assumed E2 cascade member.
9430.3 ^b 6	(16 ⁺)		D	J ^π : from 1114.0γ to (14 ⁺); assumed E2 cascade member.
9496.2 ^{&} 6	(16 ⁺)		DE	J ^π : from 1555.3γ to (14 ⁺); assumed E2 cascade member.
9624.1 ^d 7	(17 ⁻)		D	J ^π : from 1606.4γ to (15 ⁻); assumed E2 cascade member.
10084.1 ^c 8	(17 ⁻)		D	J ^π : from 1312.3γ to (15 ⁻); assumed E2 cascade member.
10646.2 ^b 6	(18 ⁺)		D	J ^π : from 1215.9γ to 16 ⁺ ; assumed E2 cascade member.
11120.5 9			D	
11268.5 ^{&} 11	(18 ⁺)		D	J ^π : from 1772.3γ to (16 ⁺); assumed E2 cascade member.
11532.2 ^d 10	(19 ⁻)		D	J ^π : from 1908.1γ to (17 ⁻); assumed E2 cascade member.
11778.5 ^c 12	(19 ⁻)		D	J ^π : from 1694.4γ to (17 ⁻); assumed E2 cascade member.
12267.7 ^b 7	(20 ⁺)		D	J ^π : from 1621.5γ to (18 ⁺); assumed E2 cascade member.
13160.5 ^{&} 15	(20 ⁺)		D	J ^π : from 1892γ to (18 ⁺); assumed E2 cascade member.
13181.4 ^d 11	(21 ⁻)		D	J ^π : from 1649.2γ to (19 ⁻); assumed E2 cascade member.
13727.0 ^c 14	(21 ⁻)		D	J ^π : from 1948.4γ to (19 ⁻); assumed E2 cascade member.
14257.7 ^b 11	(22 ⁺)		D	J ^π : from 1990.0γ to (20 ⁺); assumed E2 cascade member.
15251 ^d 3	(23 ⁻)		D	J ^π : from 2070γ to (21 ⁻); assumed E2 cascade member.
15806 ^c 7	(23 ⁻)		D	J ^π : from 2079γ to (21 ⁻); assumed E2 cascade member.
16490 ^b 3	(24 ⁺)		D	J ^π : from 2232γ to (22 ⁺); assumed E2 cascade member.
17870 ^d 4	(25 ⁻)		D	J ^π : from 2618γ to (23 ⁻); assumed E2 cascade member.
17966 ^c 7	(25 ⁻)		D	J ^π : from 2160γ to (23 ⁻); assumed E2 cascade member.

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Adopted Levels, Gammas (continued) ^{70}Se Levels (continued)

E(level) [†]	J ^π	XREF	Comments
19218 ^b 5	(26 ⁺)	D	J ^π : from 2728γ to (24 ⁺); assumed E2 cascade member.
20246 ^c 8	(27 ⁻)	D	J ^π : from 2280γ to (25 ⁻); assumed E2 cascade member.

[†] From a least-squares fit to Eγ's, by evaluators. ΔEγ=1 keV is assumed when no uncertainty is available.

[‡] From recoil distance Doppler shift method (2008Lj01), unless otherwise noted.

From recoil distance Doppler shift method (1986He17), using singles data.

@ Effective lifetime from recoil distance method, not corrected for the side feedings (1986He17).

& Band(A): g.s. yrast band.

^a Band(B): Band based on 1600, 2⁺.

^b Band(C): Band based on 4607, 8⁺.

^c Band(D): Band based on 3915, 7⁻.

^d Band(E): Band based on 4896, (9⁻).

Adopted Levels, Gammas (continued)

$\gamma(^{70}\text{Se})$									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π	Mult.&	δ^d	α^e	Comments
944.52	2 ⁺	944.51 5	100	0.0	0 ⁺	E2		4.82×10 ⁻⁴	$\alpha(\text{K})=0.000429$ 6; $\alpha(\text{L})=4.50\times 10^{-5}$ 7; $\alpha(\text{M})=7.00\times 10^{-6}$ 10; $\alpha(\text{N})=5.96\times 10^{-7}$ 9 B(E2)(W.u.)=19.7 13
1599.9	2 ⁺	655.1 5	100 21	944.52	2 ⁺	M1+E2 ^a	-1.0 +1-2	0.00109 4	$\alpha(\text{K})=0.00097$ 3; $\alpha(\text{L})=0.000103$ 3; $\alpha(\text{M})=1.60\times 10^{-5}$ 5; $\alpha(\text{N})=1.36\times 10^{-6}$ 4 B(E2)(W.u.)=33 14; B(M1)(W.u.)=0.009 4 δ : Other: 1.4 +2.3-0.6 (1980Wa19).
		1600.1 7	25 5	0.0	0 ⁺	E2		2.79×10 ⁻⁴	$\alpha(\text{K})=0.0001367$ 20; $\alpha(\text{L})=1.414\times 10^{-5}$ 20; $\alpha(\text{M})=2.20\times 10^{-6}$ 3; $\alpha(\text{N})=1.88\times 10^{-7}$ 3 B(E2)(W.u.)=0.19 8 Mult.: Q from $\gamma(\theta)$ in $^{58}\text{Ni}(^{14}\text{N},\text{pn}\gamma)$, $^{60}\text{Ni}(^{12}\text{C},2\text{n}\gamma)$; M2 excluded by comparison to RUL.
2010.3	(0 ⁺)	1065.8 @ 3	100 @	944.52	2 ⁺	(E2)		3.63×10 ⁻⁴	$\alpha(\text{K})=0.000323$ 5; $\alpha(\text{L})=3.38\times 10^{-5}$ 5; $\alpha(\text{M})=5.26\times 10^{-6}$ 8; $\alpha(\text{N})=4.48\times 10^{-7}$ 7
2038.8	4 ⁺	438.9 5	0.8 7	1599.9	2 ⁺	[E2]		0.00415	$\alpha(\text{K})=0.00368$ 6; $\alpha(\text{L})=0.000400$ 6; $\alpha(\text{M})=6.21\times 10^{-5}$ 9; $\alpha(\text{N})=5.20\times 10^{-6}$ 8 B(E2)(W.u.)=17 15
		1094.4 1	100 3	944.52	2 ⁺	E2		3.41×10 ⁻⁴	$\alpha(\text{K})=0.000304$ 5; $\alpha(\text{L})=3.18\times 10^{-5}$ 5; $\alpha(\text{M})=4.94\times 10^{-6}$ 7; $\alpha(\text{N})=4.22\times 10^{-7}$ 6 B(E2)(W.u.)=21.5 18
2382.5	4 ⁺	782.6 3	100 12	1599.9	2 ⁺	E2 ^b		7.71×10 ⁻⁴	$\alpha(\text{K})=0.000687$ 10; $\alpha(\text{L})=7.25\times 10^{-5}$ 11; $\alpha(\text{M})=1.128\times 10^{-5}$ 16; $\alpha(\text{N})=9.57\times 10^{-7}$ 14 B(E2)(W.u.)>5.2
		1438.1 7	8.×10 ¹ 5	944.52	2 ⁺	E2 ^b		2.54×10 ⁻⁴	$\alpha(\text{K})=0.0001692$ 24; $\alpha(\text{L})=1.755\times 10^{-5}$ 25; $\alpha(\text{M})=2.73\times 10^{-6}$ 4; $\alpha(\text{N})=2.33\times 10^{-7}$ 4 B(E2)(W.u.)>0.20 δ : $\delta=-0.26$ 15 (1981Ah03); 0.0 (1980Wa19).
2518.6	3 ⁽⁻⁾	1574.1 9	100	944.52	2 ⁺	D			
2553.1		1608.6 ‡	100 #	944.52	2 ⁺				
3003.2	6 ⁺	620.7 9	3 1	2382.5	4 ⁺	[E2]		1.45×10 ⁻³	$\alpha(\text{K})=0.001291$ 19; $\alpha(\text{L})=0.0001376$ 21; $\alpha(\text{M})=2.14\times 10^{-5}$ 4; $\alpha(\text{N})=1.81\times 10^{-6}$ 3 B(E2)(W.u.)=8 3
		964.39 5	100 4	2038.8	4 ⁺	E2		4.58×10 ⁻⁴	$\alpha(\text{K})=0.000408$ 6; $\alpha(\text{L})=4.28\times 10^{-5}$ 6; $\alpha(\text{M})=6.66\times 10^{-6}$ 10; $\alpha(\text{N})=5.67\times 10^{-7}$ 8 B(E2)(W.u.)=29 5
3139.6		2195.0 @ 3	100 @	944.52	2 ⁺				
3218.4	(6 ⁺)	215 5	11 7	3003.2	6 ⁺				
		835.9 4	100 11	2382.5	4 ⁺				
3356.4		973.9 ‡	100 #	2382.5	4 ⁺				
3387.4	5 ⁻	868.8 4	57 9	2518.6	3 ⁽⁻⁾	[E2]		5.91×10 ⁻⁴	$\alpha(\text{K})=0.000526$ 8; $\alpha(\text{L})=5.54\times 10^{-5}$ 8; $\alpha(\text{M})=8.61\times 10^{-6}$ 13; $\alpha(\text{N})=7.32\times 10^{-7}$ 11 B(E2)(W.u.)=4.0 14

Adopted Levels, Gammas (continued)

<u>$\gamma(^{70}\text{Se})$ (continued)</u>									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π	Mult.&	α^e	Comments	
3387.4	5^-	1348.6 4	100 12	2038.8	4^+	E1(+M2) ^c		δ : +0.12 with large error (1981Ah03); 0.0 (1980Wa19).	
3524.1	(5^-)	1005.5 7	22 7	2518.6	$3^{(-)}$	(E2) ^b	4.15×10^{-4}	$\alpha(K)=0.000370$ 6; $\alpha(L)=3.87 \times 10^{-5}$ 6; $\alpha(M)=6.02 \times 10^{-6}$ 9; $\alpha(N)=5.13 \times 10^{-7}$ 8 B(E2)(W.u.)>0.64	
		1485.2 5	100 13	2038.8	4^+	(E1) ^c	3.29×10^{-4}	Mult., δ : D+Q, -0.06 +9-2 (1981Ah03). $\alpha(K)=8.00 \times 10^{-5}$ 12; $\alpha(L)=8.22 \times 10^{-6}$ 12; $\alpha(M)=1.278 \times 10^{-6}$ 18; $\alpha(N)=1.095 \times 10^{-7}$ 16 B(E1)(W.u.)> 1.1×10^{-5}	
3644		1261 10	100	2382.5	4^+				
3788.9	(6^-)	264.8 3	100	3524.1	(5^-)	D+Q		Mult., δ : D+Q, $0.0 < \delta < 3.7$ (1980Wa19). Other: Q (1981Ah03).	
3915.4	7^-	126.6 3	5.7 20	3788.9	(6^-)				
		528.0 2	28.7 20	3387.4	5^-	E2 ^b	0.00233	$\alpha(K)=0.00207$ 3; $\alpha(L)=0.000223$ 4; $\alpha(M)=3.46 \times 10^{-5}$ 5; $\alpha(N)=2.91 \times 10^{-6}$ 4 B(E2)(W.u.)>11	
		912.2 1	100 4	3003.2	6^+	E1	2.17×10^{-4}	$\alpha(K)=0.000194$ 3; $\alpha(L)=2.00 \times 10^{-5}$ 3; $\alpha(M)=3.12 \times 10^{-6}$ 5; $\alpha(N)=2.66 \times 10^{-7}$ 4 B(E1)(W.u.)> 2.6×10^{-5}	
								Mult., δ : E1+M2 with $\delta=-0.15$ 5 (1981Ah03), however, this results in an M2 strength which exceeds the RUL.	
4037.6	8^+	1034.4 1	100	3003.2	6^+	E2	3.89×10^{-4}	$\alpha(K)=0.000346$ 5; $\alpha(L)=3.62 \times 10^{-5}$ 5; $\alpha(M)=5.64 \times 10^{-6}$ 8; $\alpha(N)=4.80 \times 10^{-7}$ 7 B(E2)(W.u.)>7.0	
								Mult.: Q from R(DCO) in $^{58}\text{Ni}(^{14}\text{N}, p\gamma)$, $^{60}\text{Ni}(^{12}\text{C}, 2n\gamma)$; M2 excluded by comparison to RUL.	
4187.4	(8^+)	969.0 6	100	3218.4	(6^+)				
4324.5		937.0 [‡]		3387.4	5^-				
		1321.3 [‡]		3003.2	6^+				
4410.7		495.3 3	100	3915.4	7^-				
4607.0	8^+	569 2	18 8	4037.6	8^+				
		691.5 6	56 8	3915.4	7^-				
		1603.7 6	100 12	3003.2	6^+				
4896.7	(9^-)	486.0 3	29 9	4410.7					
		981.3 2	100 7	3915.4	7^-				
4955.0		348.0 ^{f‡}	100 [#]	4607.0	8^+				
5205.8	(10^+)	1168.12 8	100	4037.6	8^+				
5209.1	(9^-)	1293.6 3	100	3915.4	7^-				
5308.1	(10^+)	1120.7 6	100	4187.4	(8^+)				
5693.2	(10^+)	1086.2 2	100 7	4607.0	8^+				
		1655.4 9	41 6	4037.6	8^+				
5805.5	(11^-)	908.7 2	100	4896.7	(9^-)				
6017.0		1062.0 [‡]	100 [#]	4955.0					

Adopted Levels, Gammas (continued)

$\gamma(^{70}\text{Se})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π	$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π
6490.0	(11 ⁻)	1280.9 2	100	5209.1 (9 ⁻)		9624.1	(17 ⁻)	1606.4 3	100	8017.7 (15 ⁻)	
6510.2	(12 ⁺)	1304.45 9	100	5205.8 (10 ⁺)		10084.1	(17 ⁻)	1312.3 3	100	8771.8 (15 ⁻)	
6602	(12 ⁺)	1294 5	100	5308.1 (10 ⁺)		10646.2	(18 ⁺)	1215.9 2	100	9430.3 (16 ⁺)	
6873.0	(13 ⁻)	1067.5 2	100	5805.5 (11 ⁻)		11120.5		1624.3 6	100	9496.2 (16 ⁺)	
6956.9	(12 ⁺)	1263.6 3	100 10	5693.2 (10 ⁺)		11268.5	(18 ⁺)	1772.3 9	100	9496.2 (16 ⁺)	
		1750.9 9	37 5	5205.8 (10 ⁺)		11532.2	(19 ⁻)	1908.1 7	100	9624.1 (17 ⁻)	
7305.8	(13 ⁻)	348.0 ^{f‡}		6956.9 (12 ⁺)		11778.5	(19 ⁻)	1694.4 9	100	10084.1 (17 ⁻)	
		796.5 [‡]		6510.2 (12 ⁺)		12267.7	(20 ⁺)	1621.5 3	100	10646.2 (18 ⁺)	
7554.0	(13 ⁻)	1064.0 3	100	6490.0 (11 ⁻)		13160.5	(20 ⁺)	1892 1	100	11268.5 (18 ⁺)	
7940.8	(14 ⁺)	1430.6 1	100	6510.2 (12 ⁺)		13181.4	(21 ⁻)	1649.2 4	100	11532.2 (19 ⁻)	
8017.7	(15 ⁻)	1144.7 2	100	6873.0 (13 ⁻)		13727.0	(21 ⁻)	1948.4 6	100	11778.5 (19 ⁻)	
8029	(14 ⁺)	1427.2 9	100	6602 (12 ⁺)		14257.7	(22 ⁺)	1990.0 9	100	12267.7 (20 ⁺)	
8316.3	(14 ⁺)	1359.4 3	100 8	6956.9 (12 ⁺)		15251	(23 ⁻)	2070 3	100	13181.4 (21 ⁻)	
		1806.0 6	36 5	6510.2 (12 ⁺)		15806	(23 ⁻)	2079 7	100	13727.0 (21 ⁻)	
8349.5		1043.7 [‡]	100 [#]	7305.8 (13 ⁻)		16490	(24 ⁺)	2232 3	100	14257.7 (22 ⁺)	
8771.8	(15 ⁻)	1217.8 3	100	7554.0 (13 ⁻)		17870	(25 ⁻)	2618 2	100	15251 (23 ⁻)	
9430.3	(16 ⁺)	1114.0 3	100 10	8316.3 (14 ⁺)		17966	(25 ⁻)	2160 2	100	15806 (23 ⁻)	
		1489.4 3	63 7	7940.8 (14 ⁺)		19218	(26 ⁺)	2728 4	100	16490 (24 ⁺)	
9496.2	(16 ⁺)	1555.3 3	100	7940.8 (14 ⁺)		20246	(27 ⁻)	2280 4	100	17966 (25 ⁻)	

[†] From ⁴⁰Ca(⁴⁰Ca,2 α 2 $\pi\gamma$), unless otherwise noted.

[‡] From ⁴⁰Ca(³⁶Ar, α 2 $\pi\gamma$).

[#] From ⁴⁰Ca(³⁶Ar, α 2 $\pi\gamma$).

@ From ⁵⁸Ni(¹⁴N,pn γ), ⁶⁰Ni(¹²C,2n γ).

& From $\gamma(\theta)$, R_{DCO} and γ -deexcitation pattern in ⁵⁸Ni(¹⁴N,pn γ), ⁶⁰Ni(¹²C,2n γ) ([1981Ah03](#)) or $\gamma(\theta)$ and linear polarization measurements in ⁶⁰Ni(¹²C,2n γ) ([1980Wa19](#)), unless otherwise stated.

^a D+Q from $\gamma(\theta)$ in ⁵⁸Ni(¹⁴N,pn γ), ⁶⁰Ni(¹²C,2n γ); $\Delta\pi$ = no from level scheme.

^b Q from $\gamma(\theta)$ in ⁵⁸Ni(¹⁴N,pn γ), ⁶⁰Ni(¹²C,2n γ); M2 excluded by comparison to RUL.

^c D+Q (or D) from $\gamma(\theta)$ in ⁵⁸Ni(¹⁴N,pn γ), ⁶⁰Ni(¹²C,2n γ); $\Delta\pi$ = yes from level scheme.

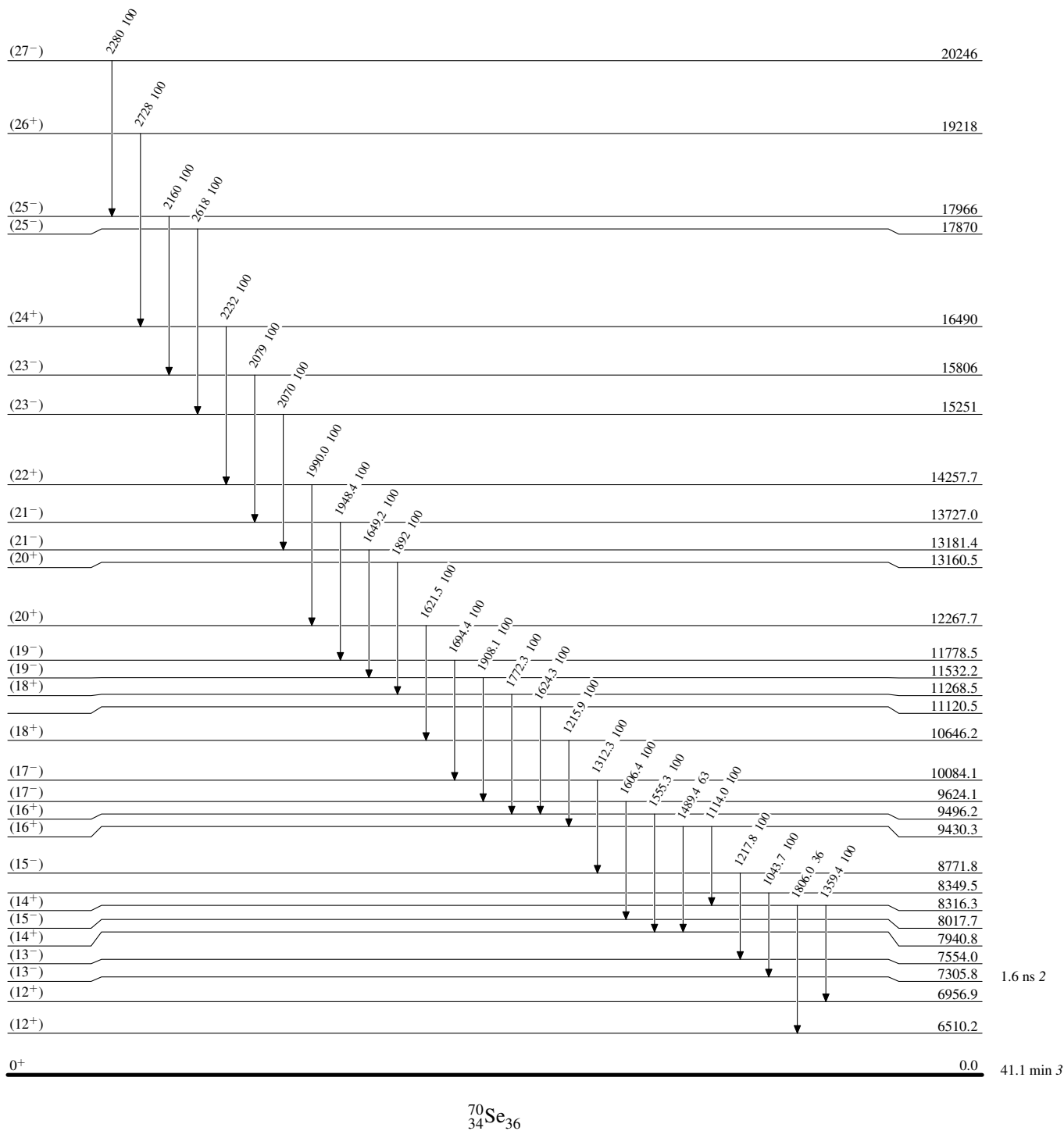
^d From $\gamma(\theta)$ in ⁵⁸Ni(¹⁴N,pn γ) ([1981Ah03](#)).

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

^f Multiply placed.

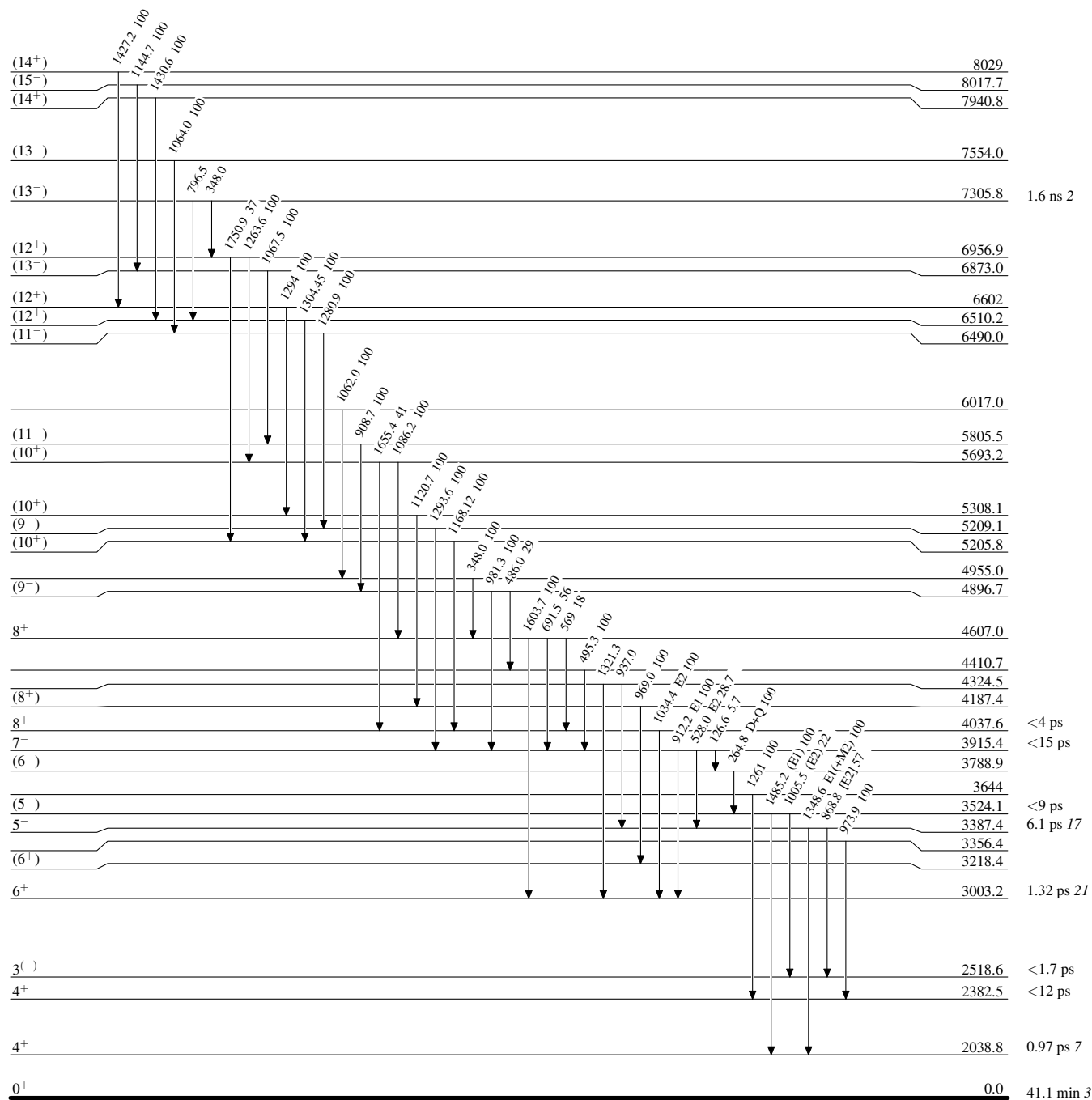
Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level



Adopted Levels, GammasLevel Scheme (continued)

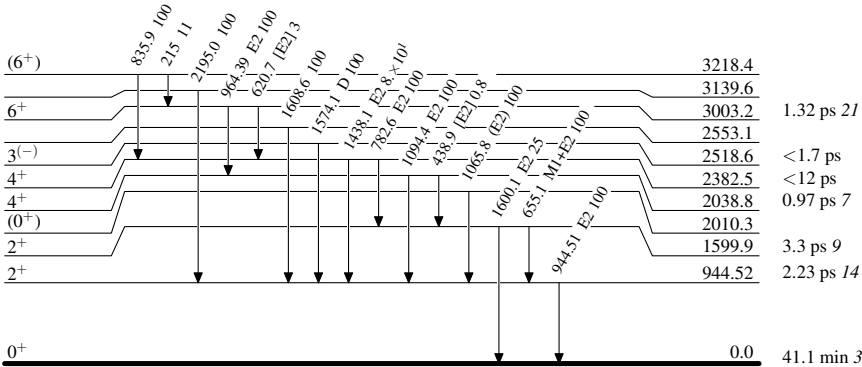
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{70}_{34}\text{Se}_{36}$

Adopted Levels, Gammas