^{58}Ni(^{28}Si,α2pγ) 2000Wi01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 105, 223 (2005)	22-Jun-2005

2000Wi01: E=130 MeV. Measured Eγ, Iγ, γγ, γ(θ), and lifetimes by DSAM using Gammasphere array of 57 large volume Ge detectors. Protons and alpha particles were detected with Microball array of 95 CsI detectors.

^{80}Sr Levels

E(level)[†]	J^{π}[#]	$T_{1/2}$[‡]	Comments
0[&]	0^+		
386.0[&]	2^+		
981.0[&]	4^+		
1142.0[b]	2^+		
1571.0[b]	4^+		
1764.0[&]	6^+		
2295.0[b]	6^+		
2701.0[&]	8^+	0.284 ps *29*	Additional information 1. Q(transition)=2.89 *+5−4*.
2837.0[c]	(5^-)		
2895.0	(5^-)		
3172.0[b]	8^+		
3394.0[c]	(7^-)		
3581.0	7^+		
3602.0[a]	7^+		
3766.0[&]	10^+	0.125 ps *14*	Additional information 2. Q(transition)=3.12 *4*.
4056.0[c]	(9^-)		
4169.0[b]	10^+		
4379.0[a]	9^+		
4469.0[d]	(9)		
4923.0[c]	(11^-)		
4952.0[&]	12^+	0.090 ps *11*	Additional information 3. Q(transition)=2.80 *+7−14*.
4995.0[@g]	(11)		
5274.0[b]	(12^+)		
5349.0[a]	11^+	0.291 ps *36*	Additional information 4. Q(transition)=3.8 *2*.
5499.0[d]	(11)		
5958.0[c]	(13^-)		
6079.0[@g]	(13)		
6276.0[&]	14^+	0.118 ps *14*	Additional information 5. Q(transition)=1.82 *+5−2*.
6470.0[a]	13^+	0.132 ps *25*	Additional information 6. Q(transition)=3.4 *+3−2*.
6494.0[b]	(14^+)		
6664.0[d]	(13)		
6967.0[@g]	(15)		
7156.0[c]	(15^-)		
7730[a]	15^+	0.083 ps *23*	Additional information 7. Q(transition)=3.0 *+4−3*.

Continued on next page (footnotes at end of table)

^{58}Ni(^{28}Si,α2pγ) 2000Wi01 (continued)

^{80}Sr Levels (continued)

E(level)[†]	Jπ[#]	T1/2[‡]	Comments
7750[&]	16+	0.028 ps *7*	Q(transition)=2.97 +*37*−*25*.
7772[@ f]	(15)		
7833.0[b]	(16+)		
7971[d]	(15)		
8132[@ g]	(17+)		
8499.0[c]	(17−)		
9098[a]	17+	0.042 ps *21*	Q(transition)=3.2 +*11*−*3*.
9319	(17+)		
9328[&]	18+		
9413[d]	(17)		
9447[@ f]	(17)		
9878[c]	(19−)		
10539[a]	19+		
10875[e]	20+		
10955[d]	(19)		
11067[&]	20+		
11120[@]	(20)		
11307[@ f]	(19)		
11370[@ c]	(21−)		
12070[a]	(21+)		
12625[e]	(22+)		
12938[@]	(22)		
13056[@ c]	(23−)		
13098[@ &]	(22+)		
13390[@ f]	(21)		
13718[a]	(23+)		
14558[e]	(24+)		
14993[@ c]	(25−)		
15569[a]	(25+)		
16671[e]	(26+)		

[†] From least-squares fit to Eγ′s, assuming Δ(Eγ)=1 keV for each γ.
[‡] From Doppler-shift attenuation method (DSAM), the uncertainties quoted by 2000Wi01 are probably statistical only. Additional 10% systematic uncertainty (due to stopping powers, etc.) is added in quadrature by the evaluator.
[#] As proposed by 2000Wi01 based on γ(θ) data and band assignments. These assignments differ significantly for some of the levels and bands than those In 2003Si06 which form the basis of assignments In Adopted Levels.
[@] Level not confirmed In 2003Si06.
[&] Band(A): g.s. Band.
[a] Band(B): band based on 7+. Parity of this band is opposite In 2003Si06 and In Adopted Levels.
[b] Band(C): band based on 2+. Starting from 1571 level, the spin is higher by one unit In 2003Si06 and 1987Da05; and In Adopted Levels.
[c] Band(D): Band based on (5−). Band crossing at 17−. This band is not assigned parity and the spin is one unit lower in 2003Si06. Also the three topmost levels are not confirmed by 2003Si06. The level scheme and spin-parity assignments in ‘Adopted Levels’ are based on work by 2003Si06.
[d] Band(E): band based on (9).
[e] Band(F): Band based on 20+. The 1933γ in this band is placed above the 20+ level at 10878 by 2003Si06; and the 1750 and

Continued on next page (footnotes at end of table)

$^{58}Ni(^{28}Si,\alpha 2p\gamma)$ 2000Wi01 (continued)

^{80}Sr Levels (continued)

2113 γ rays are placed in the g.s. band.

[f] Band(G): band based on (15). This band is not confirmed by 2003Si06.

[g] Band(H): Band based on (11). Positive parity (see 1165γ (17^+) to (15^+) transition in table 1) in table 1 but no parity is assigned in level-scheme figure 3. This band is not confirmed by 2003Si06.

$\gamma(^{80}Sr)$

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.	Comments
386		386.0	2^+	0	0^+		
429		1571.0	4^+	1142.0	2^+		
499		3394.0	(7^-)	2895.0	(5^-)		
557		3394.0	(7^-)	2837.0	(5^-)		
595		981.0	4^+	386.0	2^+		
662	19.9 *3*	4056.0	(9^-)	3394.0	(7^-)	(Q)	A_2=+0.12 *6*, A_4=−0.01 *8*.
724	23.5 *5*	2295.0	6^+	1571.0	4^+	Q	A_2=+0.13 *5*, A_4=−0.10 *7*.
754		4923.0	(11^-)	4169.0	10^+		
756		1142.0	2^+	386.0	2^+		
777	14.3 *4*	4379.0	9^+	3602.0	7^+		A_2=−0.53 *9*, A_4=+0.59 *11*. signs of A_2 and A_4 are inconsistent with ΔJ=2, Q transition.
783	100 *1*	1764.0	6^+	981.0	4^+	Q	A_2=+0.42 *6*, A_4=−0.16 *8*.
798	7.9 *5*	4379.0	9^+	3581.0	7^+	(Q)	A_2=+0.29 *15*, A_4=−0.04 *21*.
867		4923.0	(11^-)	4056.0	(9^-)		
877	13.1 *2*	3172.0	8^+	2295.0	6^+	Q	A_2=+0.30 *6*, A_4=−0.11 *9*.
884	20.7 *2*	4056.0	(9^-)	3172.0	8^+	(D)	A_2=+0.21 *6*, A_4=−0.08 *8*.
888		6967.0	(15)	6079.0	(13)		
901	3.0 *3*	3602.0	7^+	2701.0	8^+	D+Q	A_2=+0.65 *12*, A_4=+0.31 *16*.
937	73.4 *6*	2701.0	8^+	1764.0	6^+	(E2)	A_2=+0.32 *5*, A_4=−0.09 *7*.
970	15.4 *4*	5349.0	11^+	4379.0	9^+	(E2)	A_2=+0.39 *8*, A_4=−0.09 *7*.
997		4169.0	10^+	3172.0	8^+		
1030		5499.0	(11)	4469.0	(9)		
1035	13.6 *3*	5958.0	(13^-)	4923.0	(11^-)	Q	A_2=+0.31 *7*, A_4=−0.17 *9*.
1065	57.8 *6*	3766.0	10^+	2701.0	8^+	(E2)	A_2=+0.42 *5*, A_4=−0.14 *8*.
1084		6079.0	(13)	4995.0	(11)		
1099		3394.0	(7^-)	2295.0	6^+		
1105	8.0 *2*	5274.0	(12^+)	4169.0	10^+	(Q)	A_2=+0.50 *8*, A_4=−0.09 *10*.
1121		6470.0	13^+	5349.0	11^+		
1127		6079.0	(13)	4952.0	12^+		
1165		6664.0	(13)	5499.0	(11)		
1165	10.4 *3*	8132	(17^+)	6967.0	(15)	Q	A_2=+0.42 *8*, A_4=−0.13 *10*.
1185		1571.0	4^+	386.0	2^+		
1186	63.3 *4*	4952.0	12^+	3766.0	10^+	(E2)	A_2=+0.31 *6*, A_4=−0.05 *7*.
1198	9.8 *4*	7156.0	(15^-)	5958.0	(13^-)	Q	A_2=+0.40 *8*, A_4=−0.35 *12*.
1220	6.9 *3*	6494.0	(14^+)	5274.0	(12^+)	Q	A_2=+0.42 *8*, A_4=−0.15 *11*.
1229		4995.0	(11)	3766.0	10^+		
1260	30.6 *4*	7730	15^+	6470.0	13^+	(E2)	A_2=+0.40 *5*, A_4=−0.11 *8*.
1307		7971	(15)	6664.0	(13)		
1314	30.6 *3*	2295.0	6^+	981.0	4^+	(Q)	A_2=+0.33 *5*, A_4=−0.02 *8*.
1324	21.5 *3*	6276.0	14^+	4952.0	12^+	(E2)	A_2=+0.43 *7*, A_4=−0.07 *9*.
1339		7833.0	(16^+)	6494.0	(14^+)		
1343	20.5 *3*	8499.0	(17^-)	7156.0	(15^-)	(Q)	A_2=+0.33 *6*, A_4=+0.07 *8*.
1368	12.7 *3*	9098	17^+	7730	15^+	(E2)	A_2=+0.35 *7*, A_4=+0.01 *9*.
1379		9878	(19^-)	8499.0	(17^-)		
1441	12.8 *4*	10539	19^+	9098	17^+	(Q)	A_2=+0.20 *6*, A_4=0.00 *8*.
1442		9413	(17)	7971	(15)		
1474	29.2 *3*	7750	16^+	6276.0	14^+	(E2)	A_2=+0.40 *5*, A_4=−0.05 *8*.

Continued on next page (footnotes at end of table)

^{58}Ni(^{28}Si,α2pγ) 2000Wi01 (continued)

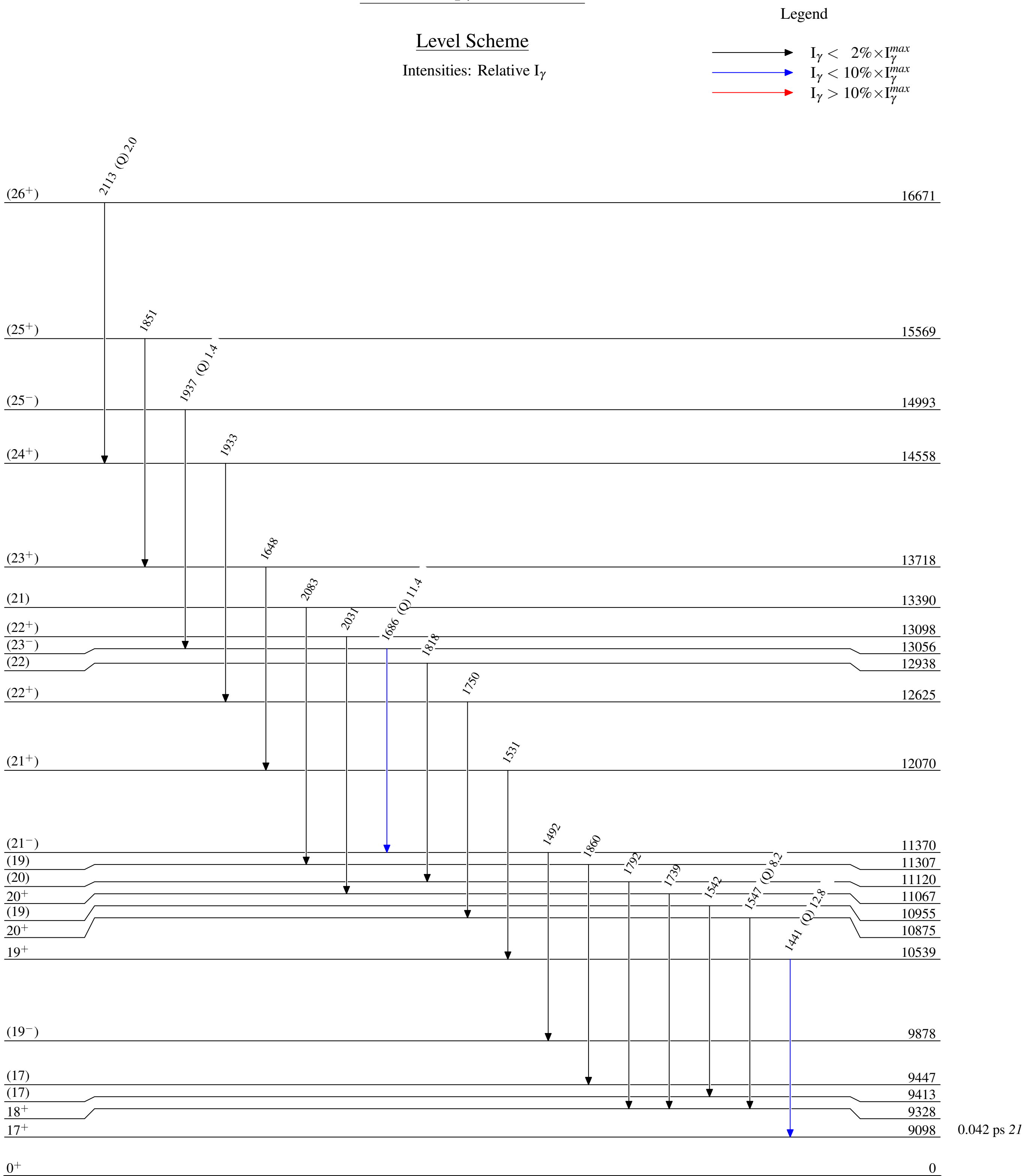
γ(^{80}Sr) (continued)

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.	Comments
1492		11370	(21$^-$)	9878	(19$^-$)		
1496		7772	(15)	6276.0	14$^+$		
1531		12070	(21$^+$)	10539	19$^+$		
1542		10955	(19)	9413	(17)		
1547	8.2 *3*	10875	20$^+$	9328	18$^+$	(Q)	A_2=+0.62 *8*, A_4=−0.08 *11*.
1578		9328	18$^+$	7750	16$^+$		
1589		9319	(17$^+$)	7730	15$^+$		
1648		13718	(23$^+$)	12070	(21$^+$)		
1675		9447	(17)	7772	(15)		
1686	11.4 *3*	13056	(23$^-$)	11370	(21$^-$)	(Q)	A_2=+0.46 *6*, A_4=−0.07 *9*.
1733		5499.0	(11)	3766.0	10$^+$		
1739		11067	20$^+$	9328	18$^+$		
1750		12625	(22$^+$)	10875	20$^+$		
1768		4469.0	(9)	2701.0	8$^+$		
1792		11120	(20)	9328	18$^+$		
1817	8.2 *2*	3581.0	7$^+$	1764.0	6$^+$	D+Q	A_2=+0.07 *6*, A_4=−0.05 *8*.
1818		12938	(22)	11120	(20)		
1838	5.3 *2*	3602.0	7$^+$	1764.0	6$^+$	D+Q	A_2=−0.25 *6*, A_4=+0.02 *8*.
1851		15569	(25$^+$)	13718	(23$^+$)		
1856		2837.0	(5$^-$)	981.0	4$^+$		
1860		11307	(19)	9447	(17)		
1914	3.0 *3*	2895.0	(5$^-$)	981.0	4$^+$	D+Q	A_2=+0.21 *9*, A_4=+0.14 *11*.
1933		14558	(24$^+$)	12625	(22$^+$)		
1937	1.4 *2*	14993	(25$^-$)	13056	(23$^-$)	(Q)	A_2=+0.60 *14*, A_4=+0.08 *17*.
2031		13098	(22$^+$)	11067	20$^+$		
2083		13390	(21)	11307	(19)		
2113	2.0 *3*	16671	(26$^+$)	14558	(24$^+$)	(Q)	A_2=+0.87 *12*, A_4=−0.11 *15*.

^{58}Ni(^{28}Si,α2pγ) 2000Wi01

Level Scheme

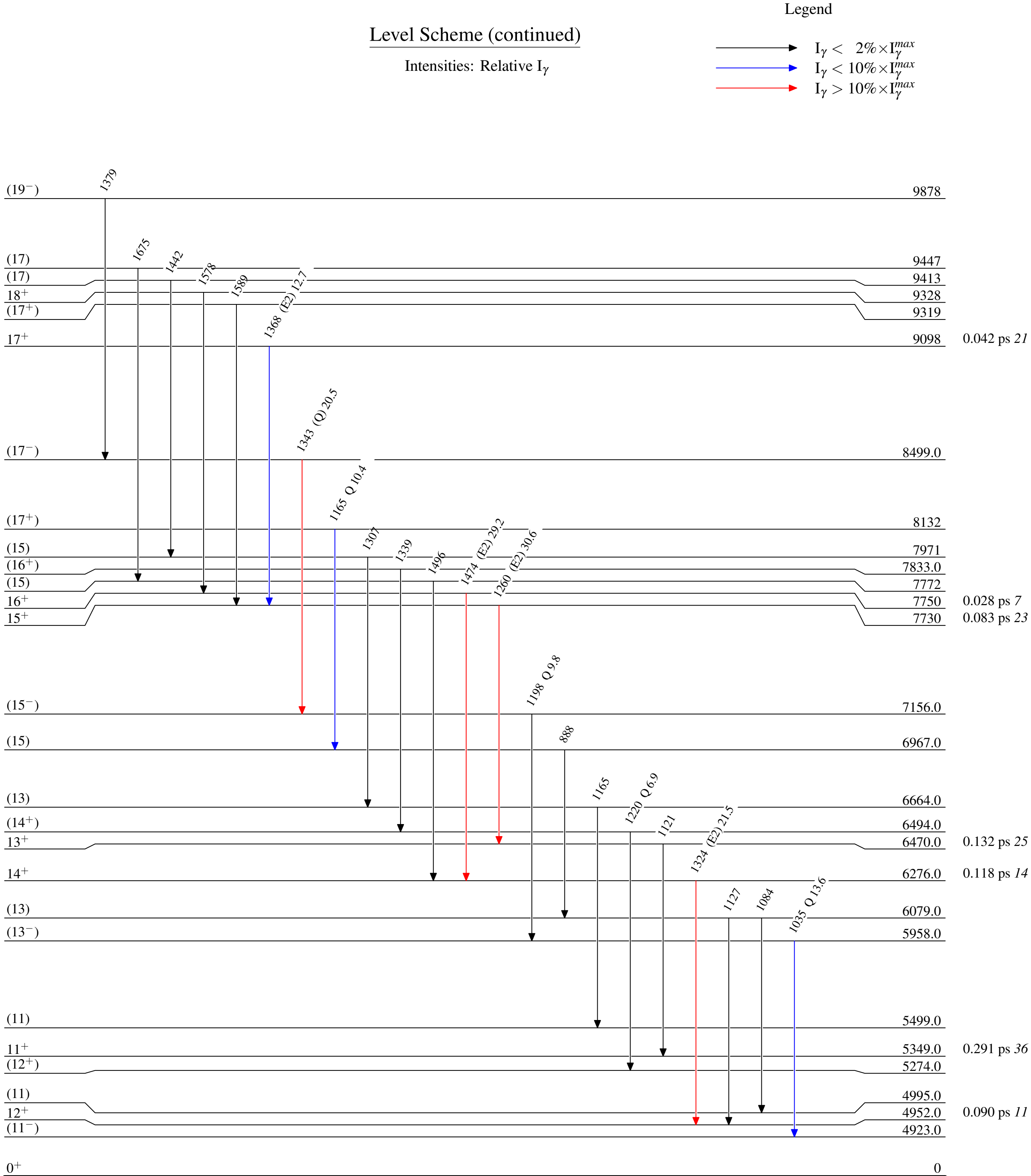
Intensities: Relative I_γ



^{58}Ni(^{28}Si,α2pγ) 2000Wi01

Level Scheme (continued)

Intensities: Relative I_γ



$^{80}_{38}Sr_{42}$

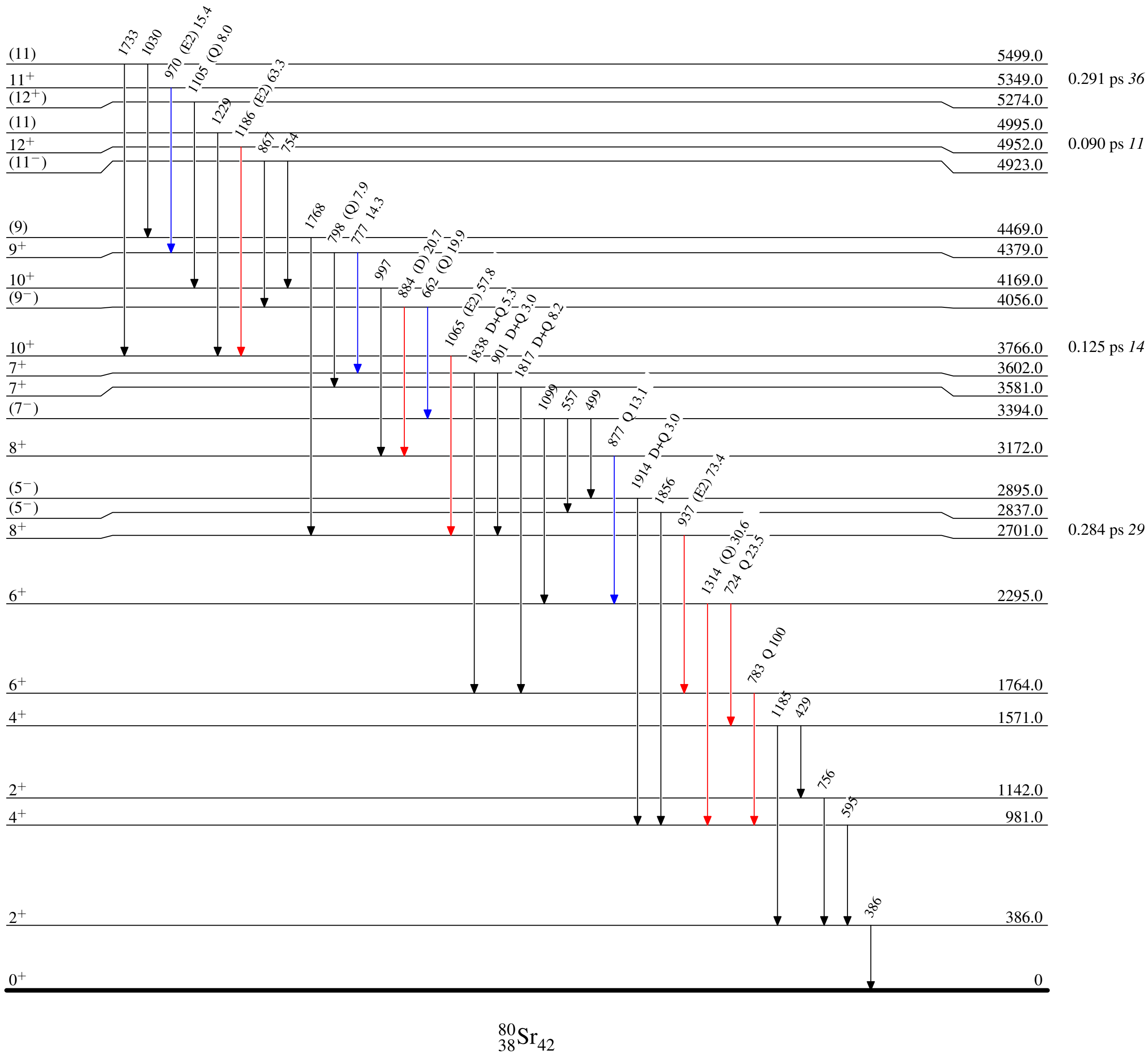
$^{58}Ni(^{28}Si,\alpha 2p\gamma)$ 2000Wi01

Level Scheme (continued)

Intensities: Relative I_γ

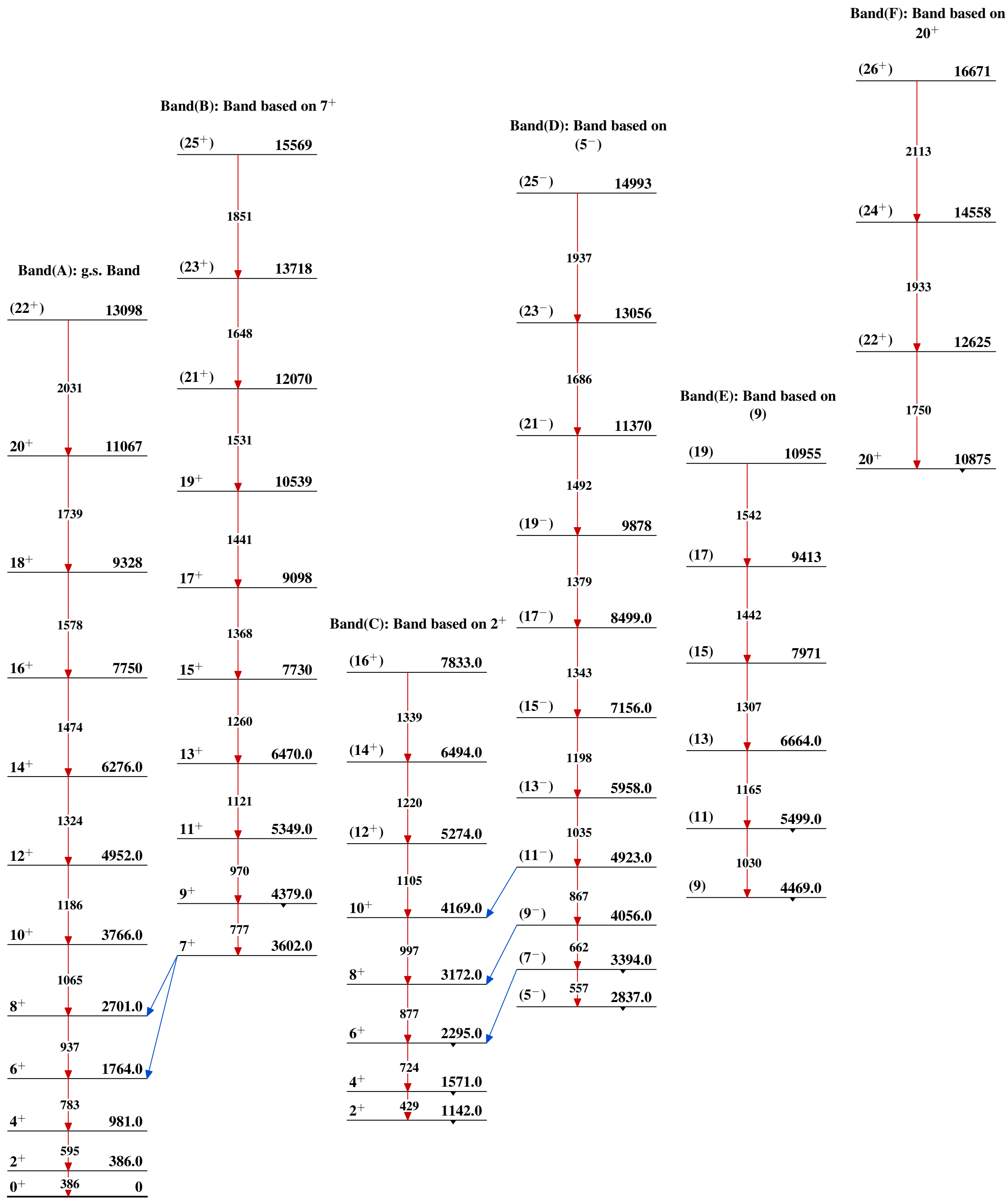
Legend

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



$^{80}_{38}Sr_{42}$

$^{58}Ni(^{28}Si,\alpha 2p\gamma)$ 2000Wi01



$^{80}_{38}Sr_{42}$

^{58}Ni(^{28}Si,α2pγ) 2000Wi01 (continued)