^{30}Si(^{18}O,3nγ) 1998Be29,2004Be20

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows	NDS 109, 171 (2008)	30-Oct-2007

See also ^{24}Mg(^{24}Mg,2pnγ) and (HI,xnγ).

1998Be29: E=60 MeV. Measured γ, $\gamma\gamma$, $\gamma\gamma$(Q)(DCO), $T_{1/2}$ by DSAM using GASP detector array (36 Compton-suppressed HPGe and 80 BGO scintillators. 40 Ge detectors for DSAM).

2004Be20: E=68 MeV. Measured Eγ, Iγ, lifetimes, $\gamma\gamma$ using EUROBALL IV array. Lifetimes estimated with application of the Recoil Filter Detector. However, other than a statement that $T_{1/2}$'s are between 40 fs and 800 fs, No values of level lifetimes are given In the paper.

^{45}Ti Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]	E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]
0[@]	7/2$^-$[&]		4855.5[c] *14*	17/2$^+$[d]	0.35 ps *5*
37.0 *8*	3/2$^-$[&]		5237.3[b] *13*	(17/2$^+$)	0.07 ps *6*
40.0 *13*	5/2$^-$[&]		5639.2[a] *14*	19/2$^+$	0.19 ps *6*
330.0[a] *10*	3/2$^+$[&]		6005.6 *15*		
745.0[b] *9*	5/2$^+$[&]		6162.9[@] *16*	23/2$^-$	0.35 ps *4*
1228.0[a] *8*	7/2$^+$[&]		6458.5[c] *14*	21/2$^+$[d]	
1354.1 *8*	9/2$^-$[&]		6755.9[b] *14*	21/2$^+$[d]	
1468.0[@] *8*	11/2$^-$[&]		7143.9[@] *19*	27/2$^-$	10.4[e] ps *14*
1883.0[b] *10*	9/2$^+$[&]	0.69 ps *7*	7340.2[a] *15*	23/2$^+$[d]	
2476.0[a] *11*	11/2$^+$	0.35 ps *7*	7828.9 *15*		
2656.2 *10*	13/2$^-$	<0.17 ps	8287.6[c] *15*	25/2$^+$[d]	
2933.7[c] *14*	(13/2$^+$)[d]		9644.0 *22*	($^-$)	<0.07 ps
3014.7[@] *11*	15/2$^-$	0.55 ps *14*	10154.0[@] *22*	(25/2$^-$)[f g]	<0.07 ps
3448.1[b] *12*	13/2$^+$	0.180 ps *21*	10793.6[c] *18*	29/2$^+$[d]	
3601.9[@] *12*	17/2$^-$	0.90 ps *7*	12499.1[@] *24*	(29/2$^-$)[g]	<0.07 ps
3922.1[a] *13*	15/2$^+$	0.312 ps *21*	13028.7[c] *21*	33/2$^+$[d]	
4344.8[@] *13*	19/2$^-$	0.104 ps *14*			

† From least-squares fit to Eγ's assuming ΔE(γ)=1 keV (evaluator).

‡ Spin assignments of positive parity states are based mainly on observed decay patterns (1998Be29). DCO ratios confirm the previous J$^\pi$ assignments for the known π=− states lying above 11/2$^-$ (1998Be29); few other detailed arguments for J$^\pi$ of π=− states given.

From DSAM (1998Be29).

@ Band(A): π=− γ cascade. 1998Be29 extended negative parity states given In 1992Bu01 from 7144 keV to 12499 keV.

& From the Adopted Levels.

a Band(B): 3/2$^+$ band, α=−1/2. 1998Be29 extended the band labeled As K$^\pi$=3/2$^+$ In 1992Bu01 from 2476 keV to 5639 keV. Further extended by 2004Be20 to 7340.

b Band(C): 3/2$^+$ band, α=+1/2. 1998Be29 extended the band labeled As K$^\pi$=3/2$^+$ In 1992Bu01 from 2476 keV to 5639 keV. Further extended by 2004Be20 to 7340.

c Band(D): (13/2$^+$) intruder band (2004Be20). Based on the relatively high $\beta\approx$0.45 reached for this new band, extended shell model calculations, and resemblance to the T=0 g.s. band In ^{46}V (1999Ol01).

d As proposed by 2004Be20; few details given. ADOPTED with some reservations by the evaluator.

e About one order of magnitude larger than the typical value for the rest of the π=− states. Therefore, the line shapes of the γ's emitted In the decay of short-lived state lying below contain both the stopped and shifted components relating to feed from above and to the direct side feeding. (1998Be29).

Continued on next page (footnotes at end of table)

^{30}Si(^{18}O,3nγ) 1998Be29,2004Be20 (continued)

^{45}Ti Levels (continued)

[f] 25/2$^-$ or 29/2$^-$ from D γ to 7144, 27/2$^-$ (1998Be29).
[g] Comparison of observed level structure with shell model calculations suggest J$^\pi$=25/2$^-$ and 29/2$^-$, respectively (1998Be29).

γ(^{45}Ti)

DCO: from 1998Be29. DCO ratios are similar for γ's between π=+ states differing by ΔJ=1 and ΔJ=2.

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
37		37.0	3/2$^-$	0	7/2$^-$		
114	10	1468.0	11/2$^-$	1354.1	9/2$^-$		
293	195	330.0	3/2$^+$	37.0	3/2$^-$		
358	100	3014.7	15/2$^-$	2656.2	13/2$^-$	D[#@]	DCO=1.75 *30*
402	8	5639.2	19/2$^+$	5237.3	(17/2$^+$)	D	
415	183	745.0	5/2$^+$	330.0	3/2$^+$	D+Q[&a]	DCO=0.82 *7*
453[b]		6458.5	21/2$^+$	6005.6			
458[b]		2933.7	(13/2$^+$)	2476.0	11/2$^+$		
459[b]		8287.6	25/2$^+$	7828.9			
474	20	3922.1	15/2$^+$	3448.1	13/2$^+$	D	
483	86	1228.0	7/2$^+$	745.0	5/2$^+$	D+Q[&a]	DCO=0.80 *11*
584[b]		7340.2	23/2$^+$	6755.9	21/2$^+$		
587	509	3601.9	17/2$^-$	3014.7	15/2$^-$	D[@c]	DCO=1.78 *11*
593	48	2476.0	11/2$^+$	1883.0	9/2$^+$	D+Q[&a]	DCO=0.85 *15*
655	33	1883.0	9/2$^+$	1228.0	7/2$^+$	D+Q[&ad]	DCO=0.96 *20*
708	13	745.0	5/2$^+$	37.0	3/2$^-$		
743[e]	499	4344.8	19/2$^-$	3601.9	17/2$^-$	M1[@c]	DCO=1.60 *19*
819[b]		6458.5	21/2$^+$	5639.2	19/2$^+$		
898	89	1228.0	7/2$^+$	330.0	3/2$^+$	[&]	DCO=0.74 *10*
933	13	4855.5	17/2$^+$	3922.1	15/2$^+$	D,E2	
946	115	3601.9	17/2$^-$	2656.2	13/2$^-$	E2[cf]	DCO=1.02 *5*
947[b]		8287.6	25/2$^+$	7340.2	23/2$^+$		
972	13	3448.1	13/2$^+$	2476.0	11/2$^+$	D,E2	
981	378	7143.9	27/2$^-$	6162.9	23/2$^-$	E2[cf]	DCO=0.85 *13*
1073[b]		7828.9		6755.9	21/2$^+$		
1117[b]		6755.9	21/2$^+$	5639.2	19/2$^+$		
1138	90	1883.0	9/2$^+$	745.0	5/2$^+$	D,E2[&g]	DCO=0.64 *11*
1188	11	1228.0	7/2$^+$	40.0	5/2$^-$		
1188	198	2656.2	13/2$^-$	1468.0	11/2$^-$	D[#@]	DCO=1.96 *14*
1228	13	1228.0	7/2$^+$	0	7/2$^-$		
1248	131	2476.0	11/2$^+$	1228.0	7/2$^+$	D,E2[&g]	DCO=0.75 *15*
1302	11	2656.2	13/2$^-$	1354.1	9/2$^-$	D,E2	
1315	17	5237.3	(17/2$^+$)	3922.1	15/2$^+$		
1330	9	4344.8	19/2$^-$	3014.7	15/2$^-$	D,E2	
1354	11	1354.1	9/2$^-$	0	7/2$^-$		
1446	135	3922.1	15/2$^+$	2476.0	11/2$^+$	D,E2[&g]	DCO=0.66 *10*
1468	1000	1468.0	11/2$^-$	0	7/2$^-$		
1518[b]		6755.9	21/2$^+$	5237.3	(17/2$^+$)		
1547	531	3014.7	15/2$^-$	1468.0	11/2$^-$	E2[#f]	DCO=1.01 *10*
1565	52	3448.1	13/2$^+$	1883.0	9/2$^+$	D,E2[&g]	DCO=0.79 *16*
1603[b]		6458.5	21/2$^+$	4855.5	17/2$^+$		
1701[b]		7340.2	23/2$^+$	5639.2	19/2$^+$		

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^{30}Si(^{18}O,3nγ) 1998Be29,2004Be20 (continued)

γ(^{45}Ti) (continued)

E_γ [†]	I_γ [†]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [‡]	Comments
1717	101	5639.2	19/2+	3922.1	15/2+	D,E2 [&g]	DCO=0.68 *11*
1789	30	5237.3	(17/2+)	3448.1	13/2+		
1818 [e]	459	6162.9	23/2−	4344.8	19/2−	E2 [cf]	DCO=0.98 *17*
1829 [b]		8287.6	25/2+	6458.5	21/2+		
1922 [b]		4855.5	17/2+	2933.7	(13/2+)		
2084 [b]		6005.6		3922.1	15/2+		
2190 [b]		7828.9		5639.2	19/2+		
2235 [b]		13028.7	33/2+	10793.6	29/2+		
2345	78	12499.1	(29/2−)	10154.0	(25/2−)	D,E2	
2500	100	9644.0	(−)	7143.9	27/2−	D,E2	
2506 [b]		10793.6	29/2+	8287.6	25/2+		
3010	141	10154.0	(25/2−)	7143.9	27/2−	(D) [@h]	DCO>1

† From 1998Be29, except As noted. Iγ′s are relative intensities.
‡ From comparison to RUL (evaluator), except As noted.
# DCO obtained for 1468γ gate.
@ ΔJ=1 D transition from DCO.
& DCO obtained for 293γ gate.
a ΔJ=1 D+Q transition from DCO. δ obtained is In agreement with adopted value.
b From 2004Be20. Not reported 1998Be29.
c DCO obtained for 1547γ gate.
d D,E2 from comparison to RUL (evaluator).
e From comparison of the Iγ′s of the sequentially emitted γ′s, 1818 and 743 keV, 1998Be29 conclude that the previous ordering by 1978Fo09 In (HI,xnγ) should Be inverted. This conclusion is supported by the existence of the 1330γ crossover.
f ΔJ=2 Q from DCO. ≠ M2 from comparison to RUL.
g ΔJ=0 D or ΔJ=2 Q transition from DCO. ≠ M2 from comparison to RUL.
h DCO obtained for 981γ gate.

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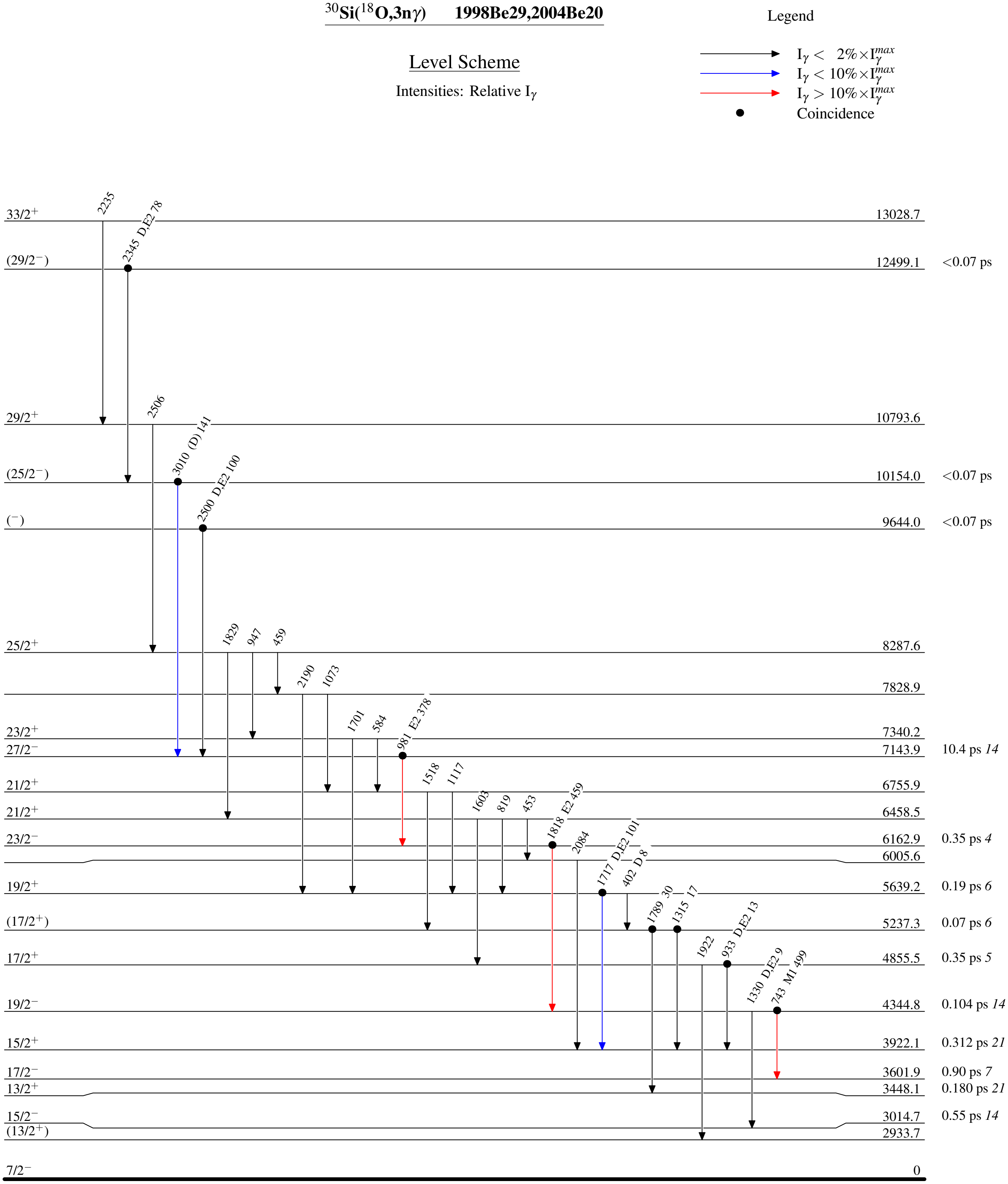
Level Scheme

Intensities: Relative I_γ

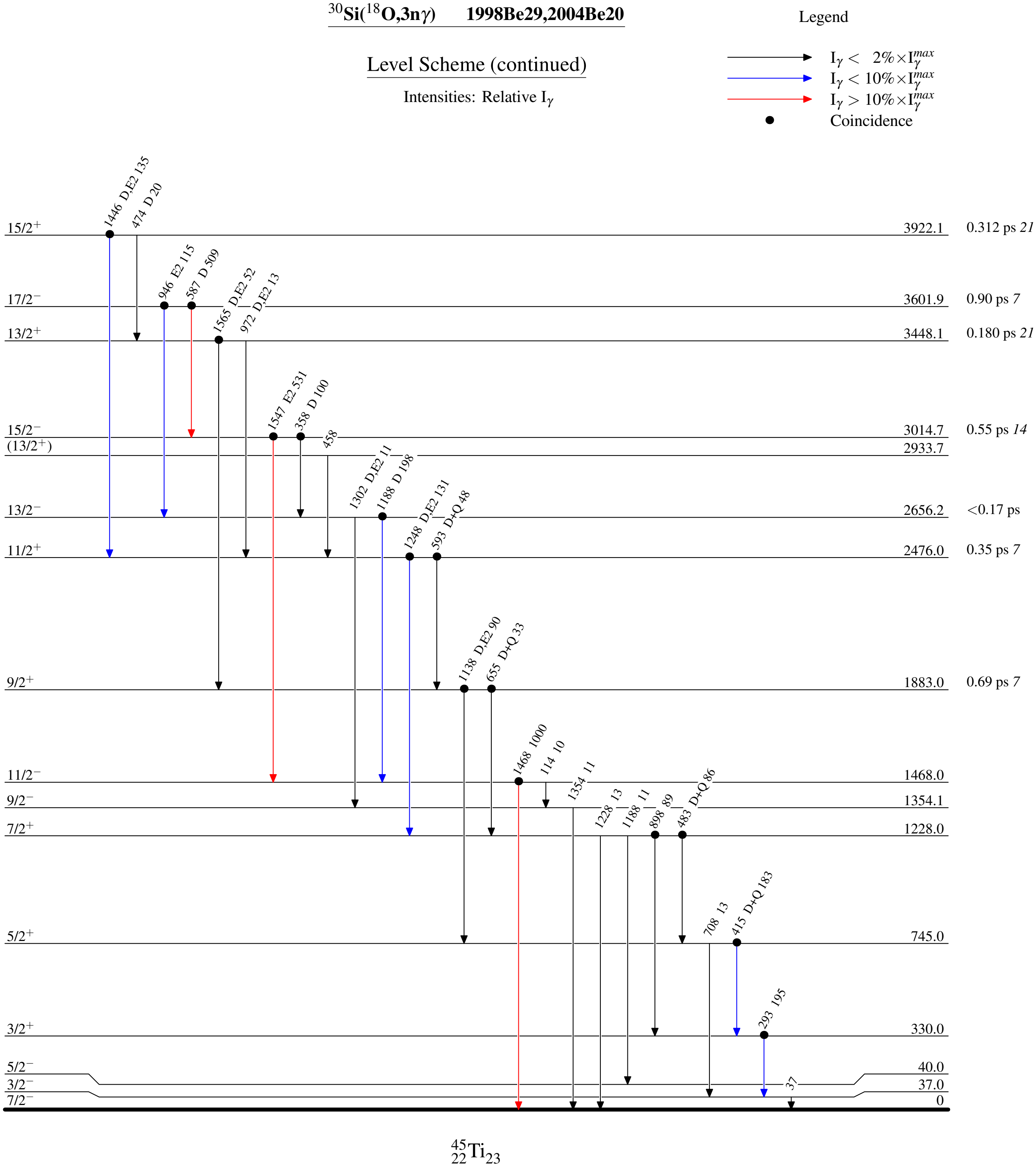


$^{45}_{22}Ti_{23}$

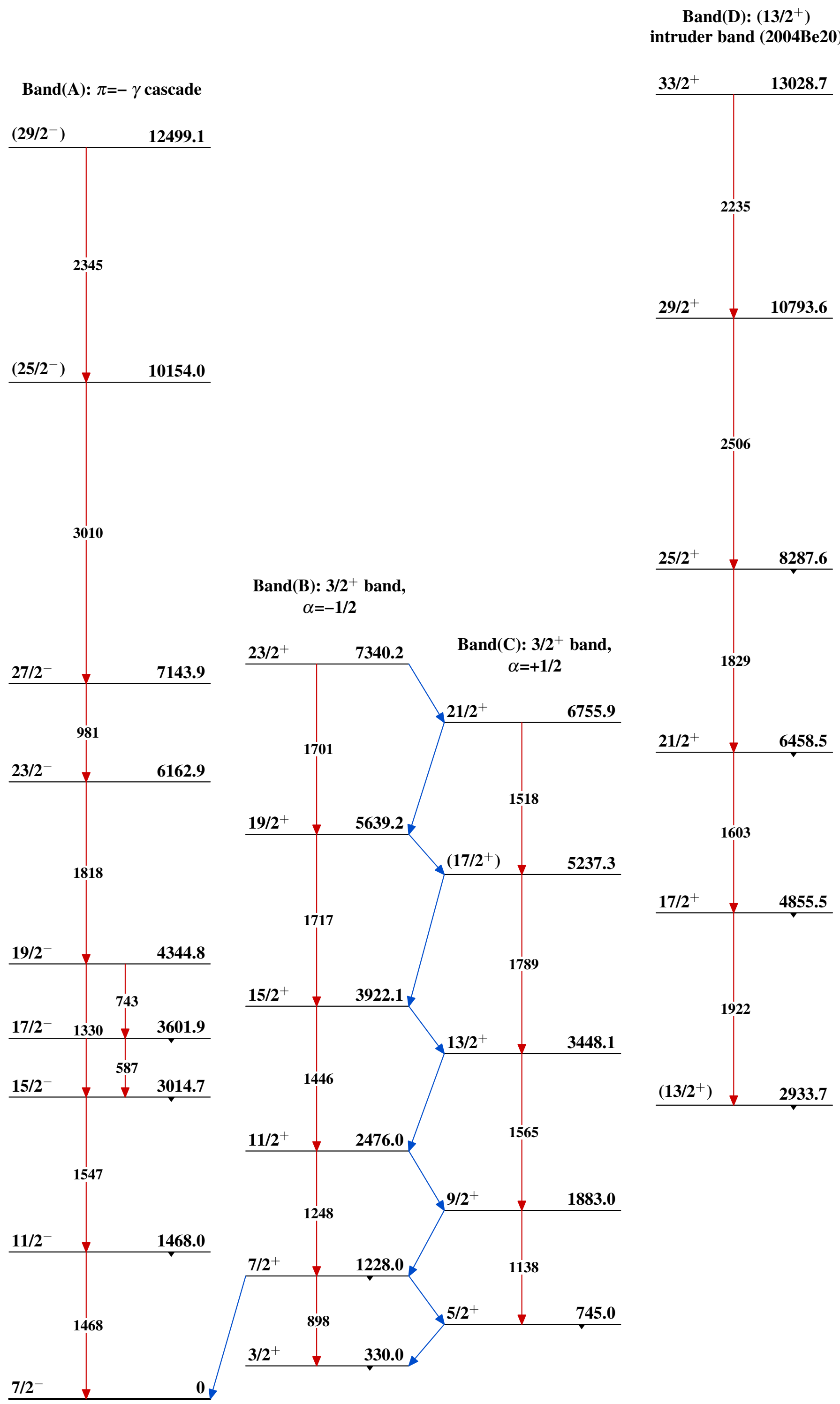
$^{30}Si(^{18}O,3n\gamma)$ 1998Be29,2004Be20

Level Scheme (continued)

Intensities: Relative I_γ



$^{30}Si(^{18}O,3n\gamma)$ 1998Be29,2004Be20



$^{45}_{22}Ti_{23}$