(HI,xnγ) 2005La29,2002La26

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 152, 331 (2018)	1-Apr-2018

2015Al06: ^{124}Sn(^{16}O,4nγ) with E(^{16}O)=68 MeV. Measured Eγ, Iγ, γγ, γγ(t) using 14 Compton-suppressed HPGe detectors and 11 $LaBr_3$(Ce) scintillator detectors; deduced $T_{1/2}$ of 1978-keV and 2307-keV levels using coincident fast-timing technique. Similar results presented in 2014Al16.

2013Va10: ^{96}Zr(^{48}Ca,α4nγ) with E(^{48}Ca)=180 MeV. Measured Eγ, Iγ, recoil-γ, recoil-γ(t) using the JUROGAM array consisting of 24 Clover detectors and 15 coaxial tapered HPGe detectors, the RITU gas-filled recoil spectrometer and the GREAT spectrometer positioned at the focal plane of RITU and consisting of a multiwire proportional counter, a double-sided Si strip detector, and a segmented planar Ge detector; deduced $T_{1/2}$ of 3096-keV level using exponential fit to γ(t).

2005La29: ^{124}Sn(^{16}O,4nγ) with E(^{16}O)=80 MeV. Measured Eγ, Iγ, γγ, γγ(θ)(DCO), γγ(lin pol), lifetimes by Doppler Shift Attenuation Method (DSAM) using 8 Compton-suppressed HPGe Clover detectors and a 14 element NaI(Tl) multiplicity filter.

2002La26: ^{124}Sn(^{16}O,4nγ) with E(^{16}O)=80 MeV. Measured Eγ, Iγ, γγ, lifetimes by Doppler Shift Attenuation Method (DSAM) using 8 Compton-suppressed HPGe Clover detectors and a 14 element NaI(Tl) multiplicity filter.

1990Pa05: ^{122}Sn(^{18}O,4nγ) with E(^{18}O)=85 and 89 MeV. Measured Eγ, Iγ, γ(θ), γγ(θ)(DCO) using 6 Compton-suppressed Ge detectors and a 14 hexagonal BGO multiplicity filter.

1978Mu09: ^{136}Ba(α,4nγ) with E(α)=61 MeV. Measured Eγ, Iγ, γγ, γ(θ) using Ge(Li) detectors.

1974De12: ^{124}Sn(^{16}O,4nγ) with E(^{16}O)=68-76 MeV. Measured Eγ, Iγ, γγ, γ(θ) using Ge(Li) detectors; deduced $T_{1/2}$ with the Recoil Distance Doppler Shift Method (RDDM).

Others: 1984Hi02, ^{130}Te(^{12}C,6nγ); 1973Wy01, ^{136}Ba(α,4nγ); 1970Sm05, ^{136}Ba(α,4nγ); 1968Wa14, ^{130}Te(^{12}C,6nγ).

The level scheme adopted here is from 2005La29 as it is the most extensive measurement. 2005La29 is in very good agreement with the earlier study by 1990Pa05, with a small number of differences which are indicated in the dataset.

^{136}Ce Levels

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
0.0[&]	0+		
552.0[&] 3	2+	≤5[j] ns	
1314.3[&] 5	4+	6.6 ps 18	$T_{1/2}$: from RDDM in 1974De12.
1978.8[a] 5	5−	496 ps 23	$T_{1/2}$: from time difference spectra between 329γ and 664γ in $LaBr_3$(Ce) detectors, with additional gate on 971γ in HPGe detector (2015Al06). Time spectra fitted with convolution of exponential decay and prompt response function.
2214.3[&] 5	6+	≤5[j] ns	
2307.5[a] 6	7−	270 ps 24	$T_{1/2}$: from time difference spectra between 971γ and 329γ in $LaBr_3$(Ce) detectors, with additional gate on 806γ in HPGe detector (2015Al06). Time spectra fitted with convolution of exponential decay and prompt response function.
2366.7 5	6+	≤5[j] ns	
2425.1[b] 6	6−	≤3[i] ns	
2955.3 5	8+		
2990.0[&] 5	8+		
3095.6[h] 6	10+	1.9 μs 1	$T_{1/2}$: weighted average of 552γ(t), 623γ(t), 762γ(t), and 1052γ(t) (2013Va10); γ(t) for each transition fit with exponential decay curve after background subtraction.
3146.9[b] 6	8−	≤3[i] ns	
3278.6[a] 6	9−	≤3[i] ns	
3400.3 6	10+	≤3[i] ns	E(level): ordering of the 410γ-841γ is reversed in 1990Pa05, resulting in an intermediate level at 3831 keV in 1990Pa05.
3441.6 6	9+		
3575.9? 9			
3760.7[h] 6	12+		
3866.0 6	10+		E(level): in 1990Pa05 this level decays by a sole 911γ and the 425γ is a populating transition.
3987.4[b] 6	10−	≤3[i] ns	

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(HI,xnγ) 2005La29,2002La26 (continued)

^{136}Ce Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
4085.0[a] *6*	11⁻	≤3[i] ns	
4240.9[g] *6*	11⁻		
4360.9[f] *7*	11$^{(+)}$		
4597.2[b] *6*	12⁻		
4786.8 *7*	14⁺		
4833.4[h] *6*	14⁺		
4873.2[g] *6*	13⁻		
4928.5[f] *8*	13$^{(+)}$		
5098.2[a] *7*	(13⁻)		
5305.2[d] *6*	15⁺		
5568.6[f] *8*	15$^{(+)}$	0.69 ps *26*	$T_{1/2}$: from DSAM in 2005La29, obtained from the weighted average of values at three angles θ=30°, 120° and 145°.
5594.1[d] *7*	16⁺		
5643.3[e] *7*	16⁺	>0.69 ps	$T_{1/2}$: lower limit from non-observation of line shape for depopulating transitions (2005La29).
5645.8[c] *6*	14⁻		
5663.1 *7*	(14⁻)		Jπ: only given in Table 1 of 2005La29, Jπ is not indicated in Figure 2.
5801.3[g] *6*	15⁻		
5809.4[c] *6*	15⁻		
5841 *1*			
5856 *1*			
5877.7[e] *7*	17⁺	>0.69 ps	$T_{1/2}$: lower limit from non-observation of line shape for depopulating transitions (2005La29).
5995.4[c] *6*	16⁻		
6099.0[d] *7*	17$^{(+)}$	<0.56 ps	$T_{1/2}$: from effective lifetime of $T_{1/2}$=0.45 ps *+11−13* from DSAM lineshape at 60° (2005La29).
6171.0[e] *8*	18⁺	>0.69 ps	$T_{1/2}$: lower limit from non-observation of line shape for depopulating transition (2005La29).
6273.6[f] *13*	(17⁺)	0.35 ps *9*	$T_{1/2}$: from DSAM in 2005La29, obtained from the weighted average of values at three angles θ=30°, 120° and 145°.
6283.2[c] *7*	17⁻		
6380.6 *13*			
6525.0 *13*	(19)		
6539.9[e] *9*	19⁺	0.40 ps *15*	$T_{1/2}$: from DSAM in 2005La29, obtained from the weighted average of values at two angles θ=30° and 145°.
6642.7[d] *8*	18$^{(+)}$		
6663.6[c] *7*	18⁻	0.509[@] ps *15*	
6832.4[g] *7*	(17⁻)		
6886.2 *12*			
6934.0[e] *9*	20⁺	0.55 ps *+17−18*	$T_{1/2}$: from DSAM in 2005La29, obtained from the weighted average of values at two angles θ=30° and 145°.
7086.6[f] *17*	(19⁺)		
7099.8[c] *8*	19⁻	0.315[@] ps *+12−10*	
7238.8?[d] *8*	(19⁺)		
7293.3 *13*			
7326.2 *16*	(19⁻)		Jπ: only given in Table 1 of 2005La29, Jπ is not indicated in Figure 2.
7345.4[e] *10*	(21⁺)	<0.43 ps	$T_{1/2}$: from effective lifetime of $T_{1/2}$=0.31 ps *12* from DSAM (2005La29).
7585.9[c] *8*	20⁻	0.263[@] ps *+26−31*	
7801.4[e] *14*	(22⁺)		
8110.8[c] *9*	21⁻	0.253[@] ps *+18−28*	
8216.0 *14*			

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(HI,xnγ) 2005La29,2002La26 (continued)

^{136}Ce Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	Comments
8316.4?[e] *17*	(23$^+$)		
8626.2[c] *9*	22$^-$	<0.43[@] ps	$T_{1/2}$: from effective lifetime of $T_{1/2}$=0.400 ps +*28*−*42* from DSAM (2002La26).
9228.8[c] *9*	23$^-$		

[†] From least-squares fit to Eγ by evaluator.
[‡] As proposed in 2005La29.
[#] From Doppler shift attenuation method (DSAM) in 2002La26 and 2005La29 as indicated, except where noted. In both measurements, the uncertainties on stopping powers are not included in the quoted uncertainty.
[@] From DSAM in 2002La26; result is a weighted average of values at four angles θ=30°, 60°, 120° and 145°.
[&] Band(A): g.s. yrast band.
[a] Band(B): $\nu[h_{11/2}\otimes s_{1/2}d_{3/2}]$, α=1.
[b] Band(b): $\nu[h_{11/2}\otimes s_{1/2}d_{3/2}]$, α=0.
[c] Band(C): Dipole magnetic-rotational band based on 14$^-$. Possible configuration=$\pi[g_{7/2}h_{11/2}]\otimes\nu[h^{-2}_{11/2}]$, oblate.
[d] Band(D): Dipole magnetic-rotational band based on 15$^+$. Possible configuration=$\pi[g_{7/2}h_{11/2}]\otimes\nu[g_{7/2}h_{11/2}]$.
[e] Band(E): Dipole magnetic-rotational band based on 16$^+$. Possible configuration=$\pi[h^{2}_{11/2}]\otimes\nu[h^{-2}_{11/2}]$.
[f] Band(F): highly deformed band based on 11$^{(+)}$. Possible configuration=$\nu i^{2}_{13/2}$.
[g] Band(G): Band based on 11$^-$. Possible configuration=$\pi[g_{7/2}h_{11/2}]$.
[h] Band(H): Band based on 10$^+$. Probable configuration=$\nu h^{2}_{11/2}$.
[i] From γ(t) in 1978Mu09.
[j] From γ(t) in 1970Sm05.

γ(^{136}Ce)

For values from 2005La29: R(DCO)=[Iγ_1 at 30°, 35°; gated on γ_2 at 90°, 105°]/ [Iγ_1 at 90°, 105°; gated on γ_2 at 30°, 35°]. Expected values are R(DCO) ≤0.6 for stretched D and R(DCO)≥1.0 for stretched quadrupole. For R(DCO) ratios from 1990Pa05, expected values are R(DCO) ≤0.7 for stretched D and R(DCO)≥1.0 for stretched quadrupole.

K electron intensity ratio measured in 1973Wy01 as ce(K) 552γ: 762γ: 899γ = 100 *15*: 43 *15*: 6.3 *20*.

1990Pa05 identify a set of weak transitions with energies 189, 158, 201, 169, 384, 234, 293 which they state probably feed the 8$^+$, 2990-keV level via a 857γ. As the placement was not definitely given by 1990Pa05 and these transitions were not observed in the subsequent work of 2005La29, they are not adopted here.

Eγ[†]	Iγ[‡]	E_i(level)	J^{π}_i	E_f	J^{π}_f	Mult.[#]	Comments
105.7 *5*	40 *2*	3095.6	10$^+$	2990.0	8$^+$	Q	DCO=1.13 *21* (2005La29) A_2=+0.26 *5*, A_4=+0.04 *5* (1990Pa05).
146.4 *5*	3.0 *4*	5809.4	15$^-$	5663.1	(14$^-$)	D	DCO=0.59 *17* (2005La29)
163.4 *5*	2.1 *3*	5809.4	15$^-$	5645.8	14$^-$	D	DCO=0.58 *17* (2005La29)
185.9 *5*	17 *2*	5995.4	16$^-$	5809.4	15$^-$	M1	DCO=0.71 *9* (2005La29) POL=−0.03 *2* (2005La29). A_2=−0.16 *4*, DCO=0.78 *4* (1990Pa05).
192		3146.9	8$^-$	2955.3	8$^+$	D	DCO=0.7 *1* (1990Pa05)
194.2 *5*	5.5 *6*	5995.4	16$^-$	5801.3	15$^-$	D	DCO=0.58 *9* (2005La29)
234.4 *5*	4.0 *4*	5877.7	17$^+$	5643.3	16$^+$	M1	DCO=0.56 *8* (2005La29) POL=−0.09 *6* (2005La29).
253.4 *5*	19 *2*	4240.9	11$^-$	3987.4	10$^-$	D+Q	DCO=0.40 *5* (2005La29) A_2=−0.21 *5*, A_4=+0.01 *6*, DCO=0.58 *4* (1990Pa05).
276.0[@b] *5*		4873.2	13$^-$	4597.2	12$^-$		

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(HI,xnγ) 2005La29,2002La26 (continued)

$\gamma(^{136}Ce)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	Comments
287.7 *5*	29 *2*	6283.2	17^-	5995.4	16^-	M1	DCO=0.35 *6* (2005La29) POL=−0.02 *1* (2005La29).
288.9 *5*	5 *1*	5594.1	16^+	5305.2	15^+	D+Q	A_2=−0.18 *4*, A_4=−0.00 *5*, DCO=0.69 *4* (1990Pa05).
293.3 *5*	4.6 *5*	6171.0	18^+	5877.7	17^+	D	DCO=0.32 *8* (2005La29)
328.5 *5*	26 *2*	2307.5	7^-	1978.8	5^-	E2	DCO=1.22 *11* (2005La29) POL=+0.04 *2* (2005La29). A_2=+0.36 *6*, A_4=−0.06 *6*, DCO=1.4 *1* (1990Pa05).
338[b] *1*		5643.3	16^+	5305.2	15^+		
350 *1*		5995.4	16^-	5645.8	14^-		
354 *1*		6525.0	(19)	6171.0	18^+		
368.9 *5*	3.6 *3*	6539.9	19^+	6171.0	18^+	D	DCO=0.40 *16* (2005La29)
380.5 *5*	20 *1*	6663.6	18^-	6283.2	17^-	M1	DCO=0.65 *6* (2005La29) POL=−0.05 *2* (2005La29). A_2=−0.35 *4*, A_4=−0.04 *5*, DCO=0.69 *5* (1990Pa05).
394.1 *5*	1.6 *3*	6934.0	20^+	6539.9	19^+	D	DCO=0.47 *25* (2005La29)
410.3[a] *5*	2.9 *2*	3400.3	10^+	2990.0	8^+	Q	DCO=1.18 *17* (2005La29)
411.4[@b] *5*	<1	7345.4	(21^+)	6934.0	20^+		
425 *1*	1.4 *2*	3866.0	10^+	3441.6	9^+	D	DCO=0.45 *18* (2005La29)
429[b] *1*		3575.9?		3146.9	8^-		E_γ: transition not listed in Table 1 of 2005La29, but indicated as tentative transition in Figure 2.
436.3 *5*	16 *1*	7099.8	19^-	6663.6	18^-	M1	DCO=0.53 *9* (2005La29) POL=−0.02 *3* (2005La29). A_2=−0.45 *4*, A_4=−0.01 *6*, DCO=0.72 *6* (1990Pa05).
440[@b] *1*	4.5 *4*	7326.2	(19^-)	6886.2		D	DCO=0.51 *16* (2005La29)
445.2 *5*	3.4 *4*	3400.3	10^+	2955.3	8^+	Q	DCO=1.10 *9* (2005La29)
446.4 *5*	21 *2*	2425.1	6^-	1978.8	5^-	D+Q	DCO=0.25 *4* (2005La29) A_2=−0.50 *4*, A_4=−0.11 *6*, DCO=0.59 *4* (1990Pa05).
456[@b] *1*		7801.4	(22^+)	7345.4	(21^+)		
471.7 *5*	18 *2*	5305.2	15^+	4833.4	14^+	M1	DCO=0.60 *17* (2005La29) POL=−0.07 *4* (2005La29). A_2=−0.31 *5*, A_4=−0.03 *6*, DCO=0.40 *3* (1990Pa05).
474 *1*	0.7 *2*	6283.2	17^-	5809.4	15^-		
486.1 *5*	4.0 *3*	7585.9	20^-	7099.8	19^-	M1	DCO=0.64 *24* (2005La29) POL=−0.09 *6* (2005La29).
486.4 *5*	1.7 *3*	3441.6	9^+	2955.3	8^+		
494.9 *5*	4.1 *3*	4360.9	$11^{(+)}$	3866.0	10^+	D	DCO=0.53 *10* (2005La29)
504.9 *5*	8 *1*	6099.0	$17^{(+)}$	5594.1	16^+	D	DCO=0.65 *20* (2005La29) DCO=0.5 *1* (1990Pa05).
515[b] *1*		8316.4?	(23^+)	7801.4	(22^+)		E_γ: assignment to 23^- to 22^- transition in Table 1 appears to be a misprint, given the placement as a transition in positive parity band in Figure 2 of 2005La29.
515.4[&] *5*	2.4 *3*	8626.2	22^-	8110.8	21^-	D	DCO=0.4 *3* (2005La29)
524.9[&] *5*	3.5 *3*	8110.8	21^-	7585.9	20^-	D	DCO=0.59 *11* (2005La29)
536 *1*	5 *1*	5841		5305.2	15^+	D	DCO=0.5 *1* (1990Pa05)
543.6 *5*	4 *1*	6642.7	$18^{(+)}$	6099.0	$17^{(+)}$	D	DCO=0.4 *3* (2005La29) DCO=0.4 *1* (1990Pa05).
547.4 *5*	5 *1*	5645.8	14^-	5098.2	(13^-)	D	DCO=0.64 *22* (2005La29)
551 *1*		5856		5305.2	15^+		
552.0 *5*	100	552.0	2^+	0.0	0^+	E2	DCO=0.81 *4* (2005La29) POL=+0.03 *2* (2005La29). A_2=+0.26 *4*, A_4=−0.02 *4*.
567.6 *5*	6.3 *5*	4928.5	$13^{(+)}$	4360.9	$11^{(+)}$	Q	DCO=1.04 *21* (2005La29)
572[b] *1*		5877.7	17^+	5305.2	15^+		

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(HI,xnγ) 2005La29,2002La26 (continued)

γ(^{136}Ce) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	Comments
596.1[b] 5	<1	7238.8?	(19$^+$)	6642.7	18$^{(+)}$		
602.6 5	2.9 3	9228.8	23$^-$	8626.2	22$^-$		
603 1	5 1	6886.2		6283.2	17$^-$		
609.9 5	11 1	4597.2	12$^-$	3987.4	10$^-$	Q	DCO=1.26 14 (2005La29)
623.4 5	21 1	2990.0	8$^+$	2366.7	6$^+$	E2	DCO=0.91 11 (2005La29) POL=+0.02 2 (2005La29). A_2=+0.33 4, A_4=+0.07 5 (1990Pa05).
632.3 5	30 2	4873.2	13$^-$	4240.9	11$^-$	E2	DCO=1.14 11 (2005La29) POL=+0.03 3 (2005La29). DCO=1.3 1 (1990Pa05).
640.1 5	5 1	5568.6	15$^{(+)}$	4928.5	13$^{(+)}$	Q	DCO=1.58 4 (2005La29)
647.8 5	<1	2955.3	8$^+$	2307.5	7$^-$		
664.3 5	38 3	1978.8	5$^-$	1314.3	4$^+$	E1	DCO=0.52 7 (2005La29) POL=+0.03 2 (2005La29). DCO=0.86 4 (1990Pa05).
665[b] 1		4240.9	11$^-$	3575.9?			E_γ: transition not listed in Table 1 of 2005La29, but indicated as tentative transition in Figure 2.
665.2 5	39 3	3760.7	12$^+$	3095.6	10$^+$	E2	DCO=1.5 6 (2005La29) POL=+0.04 2 (2005La29). DCO=0.9 1 (1990Pa05).
668 1	1.1 1	6663.6	18$^-$	5995.4	16$^-$		
690.3 5	6 2	5995.4	16$^-$	5305.2	15$^+$	E1	DCO=0.40 16 (2005La29) POL=+0.22 9 (2005La29). DCO=0.6 1 (1990Pa05).
705 1	<1	6273.6	(17$^+$)	5568.6	15$^{(+)}$		
721.9 5	26 3	3146.9	8$^-$	2425.1	6$^-$	E2	DCO=0.93 10 (2005La29) POL=+0.02 2 (2005La29). DCO=1.2 1 (1990Pa05).
741.1 5	7 2	2955.3	8$^+$	2214.3	6$^+$	Q	DCO=0.90 15 (2005La29) A_2=+0.23 12, A_4=+0.13 14, DCO=0.9 2 (1990Pa05).
761 1		5594.1	16$^+$	4833.4	14$^+$	Q	A_2=+0.34 4, A_4=−0.03 4, DCO=1.0 1 (1990Pa05).
762.3 5	98 7	1314.3	4$^+$	552.0	2$^+$	E2	DCO=1.21 7 (2005La29) POL=+0.07 3 (2005La29). DCO=1.05 4 (1990Pa05).
775.6 5	22 2	2990.0	8$^+$	2214.3	6$^+$	E2	DCO=1.0 3 (2005La29) POL=+0.02 4 (2005La29). A_2=+0.32 5, A_4=+0.08 6, DCO=1.2 2 (1990Pa05).
790 1	4 1	5663.1	(14$^-$)	4873.2	13$^-$		
794 1		6099.0	17$^{(+)}$	5305.2	15$^+$		
806.2 5	18 2	4085.0	11$^-$	3278.6	9$^-$	Q	DCO=1.0 1 (1990Pa05)
810[b] 1		5643.3	16$^+$	4833.4	14$^+$		I_γ: weak intensity.
812 1	4.8 5	6380.6		5568.6	15$^{(+)}$		
813[@b] 1		7086.6	(19$^+$)	6273.6	(17$^+$)		
816 1	0.71 4	7099.8	19$^-$	6283.2	17$^-$		
839.3 5	17 2	3146.9	8$^-$	2307.5	7$^-$		
840.5 5	16 1	3987.4	10$^-$	3146.9	8$^-$	Q	DCO=0.97 12 (2005La29)
840.7[a] 5	4.6 4	4240.9	11$^-$	3400.3	10$^+$		
856.6 5	6.4 5	5643.3	16$^+$	4786.8	14$^+$	E2	DCO=1.20 19 (2005La29) POL=+0.12 10.
900.1 5	25 2	2214.3	6$^+$	1314.3	4$^+$	E2	DCO=1.40 17 (2005La29) POL=+0.03 2 (2005La29). A_2=+0.28 4, A_4=−0.05 5, DCO=1.2 1 (1990Pa05).
910.6 5	6 1	3866.0	10$^+$	2955.3	8$^+$	E2	DCO=1.03 8 (2005La29) POL=+0.08 5 (2005La29).
912.7 5	1.6 2	7293.3		6380.6		Q	DCO=1.2 6 (2005La29)

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(HI,xnγ) 2005La29,2002La26 (continued)

γ(^{136}Ce) (continued)

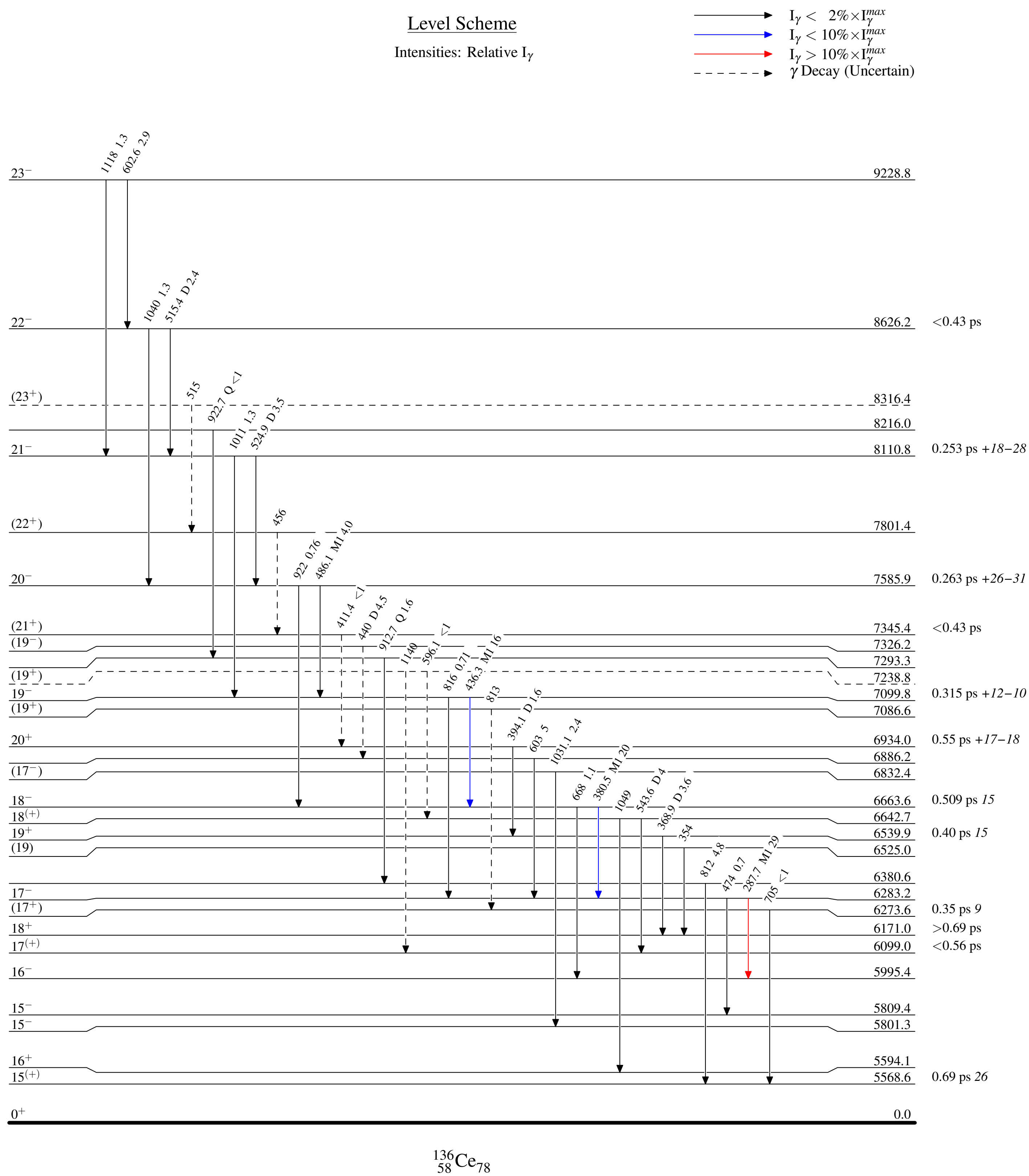
E_γ [†]	I_γ [‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [#]	Comments
922 *1*	0.76 *5*	7585.9	20⁻	6663.6	18⁻		
922.7 *5*	<1	8216.0		7293.3		Q	DCO=2.0 *9* (2005La29)
928.1 *5*	9 *1*	5801.3	15⁻	4873.2	13⁻	Q	DCO=1.33 *20* (2005La29) DCO=1.3 *2* (1990Pa05).
936.4 *5*	15 *1*	5809.4	15⁻	4873.2	13⁻	E2	DCO=1.14 *11* (2005La29) POL=+0.04 *2*. A_2=+0.51 *10*, A_4=−0.04 *10*, DCO=1.0 *1* (1990Pa05).
970.8 *5*	16 *2*	3278.6	9⁻	2307.5	7⁻	E2	DCO=1.13 *11* (2005La29) POL=+0.06 *3* (2005La29). A_2=+0.38 *8*, A_4=+0.02 *9*, DCO=1.3 *1* (1990Pa05).
976.1 *5*	3 *1*	5809.4	15⁻	4833.4	14⁺	E1	DCO=0.71 *22* (2005La29) POL=+0.10 *9* (2005La29). DCO=0.7 *1* (1990Pa05).
1011 *1*	1.3 *1*	8110.8	21⁻	7099.8	19⁻		
1013.0 *5*	4 *1*	5098.2	(13⁻)	4085.0	11⁻		
1026.1 *5*	8.4 *13*	4786.8	14⁺	3760.7	12⁺	E2	DCO=1.7 *4* (2005La29) POL=+0.13 *10* (2005La29).
1031.1 *5*	2.4 *3*	6832.4	(17⁻)	5801.3	15⁻		
1040 *1*	1.3 *1*	8626.2	22⁻	7585.9	20⁻		
1049 *1*		6642.7	18⁽⁺⁾	5594.1	16⁺		
1052.5 *5*	38 *2*	2366.7	6⁺	1314.3	4⁺	E2	DCO=1.22 *15* (2005La29) POL=+0.02 *2* (2005La29). A_2=+0.28 *4*, A_4=−0.05 *5* (1990Pa05).
1072.7 *5*	34 *2*	4833.4	14⁺	3760.7	12⁺	Q	DCO=1.26 *9* (2005La29) A_2=+0.47 *5*, A_4=−0.06 *5* (1990Pa05).
1118 *1*	1.3 *2*	9228.8	23⁻	8110.8	21⁻		
1140 [b] *1*		7238.8?	(19⁺)	6099.0	17⁽⁺⁾		

[†] From 2005La29.
[‡] From 2005La29. Relative intensities for strong transitions were obtained by 2005La29 from singles γ spectra by summing spectra from all clovers at various angles. Intensities of weaker transitions were obtained from the $\gamma\gamma$-coin spectra and suitably normalized to singles γ-ray intensities.
[#] Multipolarties for strong transitions have been determined by 2005La29 from $\gamma\gamma(\theta)$(DCO) and γ(lin pol) measurements. The multipolarities of weak transitions was obtained from a measurement of DCO ratios only.
[@] Placement is indicated as tentative in Table 1 of 2005La29, but indicated as definite in their Figure 2.
[&] The ordering of the 515-525 cascade has been reversed in 2005La29 compared with that given in 1990Pa05, based on intensity considerations.
[a] The ordering of the 410-841 cascade has been reversed in 2005La29 compared with that given in 1990Pa05, based on intensity considerations.
[b] Placement of transition in the level scheme is uncertain.

(HI,xnγ) 2005La29,2002La26

Level Scheme

Intensities: Relative I_γ



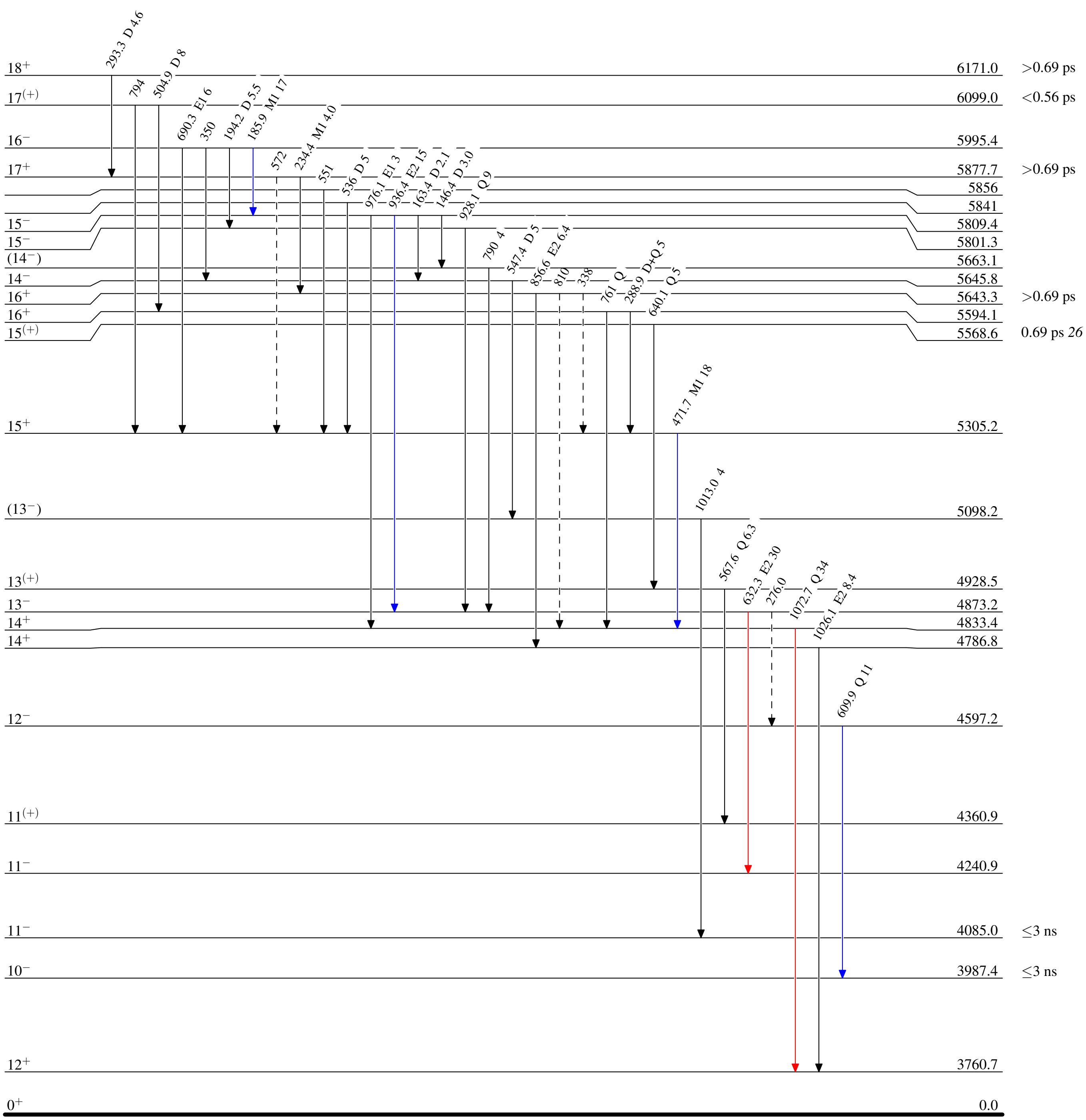
(HI,xnγ) 2005La29,2002La26

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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

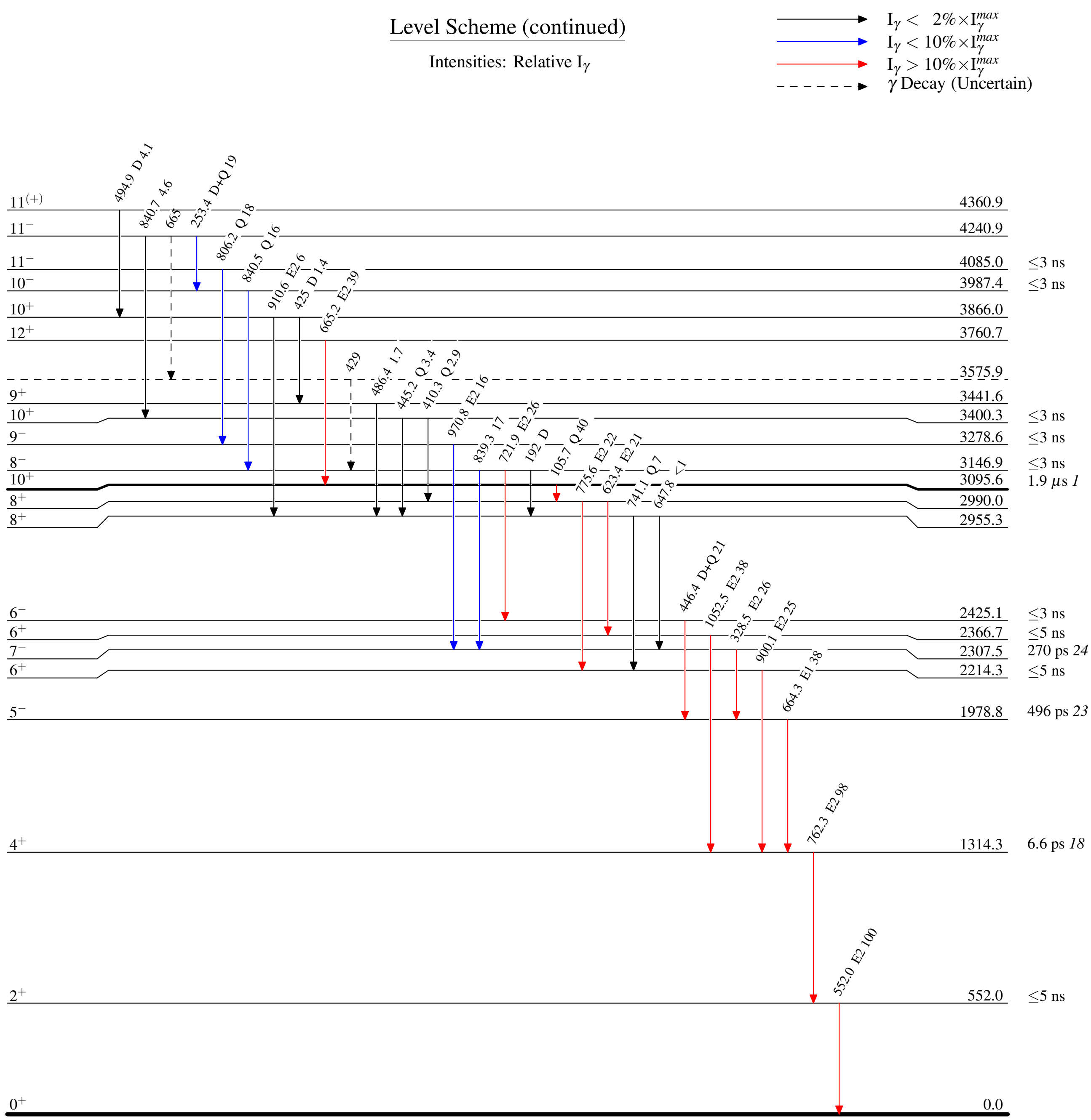


$^{136}_{58}Ce_{78}$

(HI,xnγ) 2005La29,2002La26

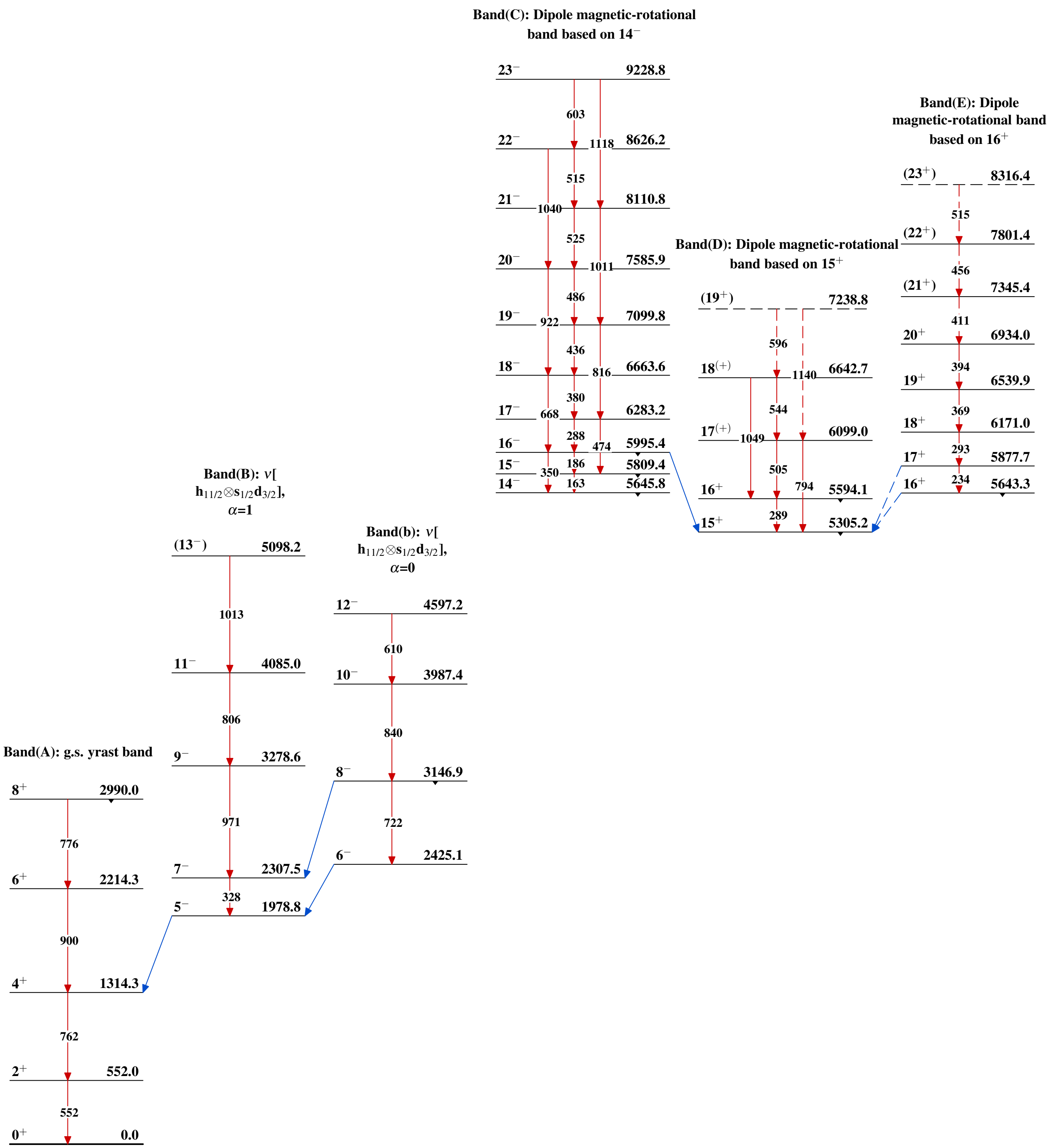
Level Scheme (continued)

Intensities: Relative I_γ



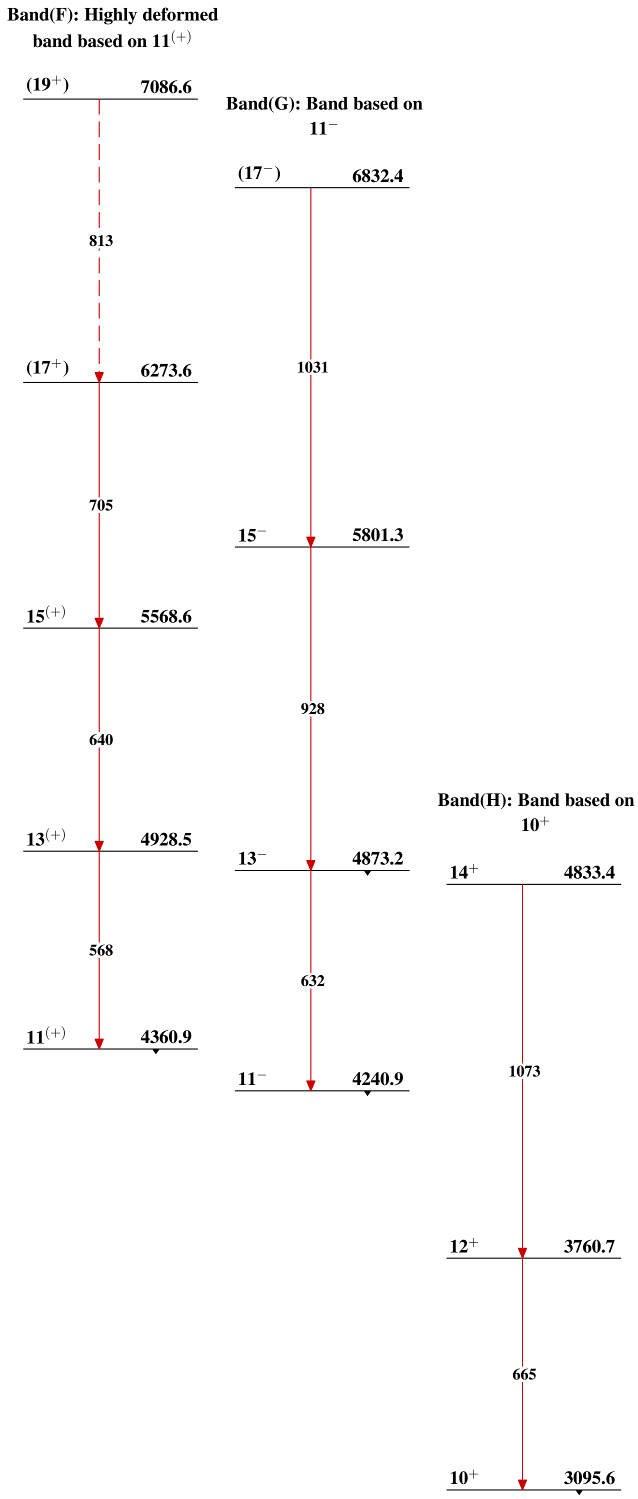
$^{136}_{58}Ce_{78}$

(HI,xnγ) 2005La29,2002La26



$^{136}_{58}Ce_{78}$

(HI,xnγ) 2005La29,2002La26 (continued)



$^{136}_{58}Ce_{78}$