^{207}Pb(n,n′γ) 2000Ka07,1995An36

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, S. Lalkovski	NDS 112, 707 (2011)	1-Aug-2010

2000Ka07: Facility: Kentucky Van de Graaff; Beam; neutrons produced in ^{3}H(p,n)^{3}He reaction. 1.875 MHz pulsed beam with a width of 1 ns; Target: 40.916 g enriched to 92.78% in ^{207}Pb; Detectors: four HPGe, BGO; Measured: neutrons tof, γ, γγ, γγ(θ), $T_{1/2}$. Also from the same collaboration: 1999Ya07, 1998Ye02.

1995AN36: Facility: SODERN neutron generator; Beam: E(n)=14 MeV; Target: 100 g high-purity PbO; Detectors: n-type HPGe, 100 cm^3 W and Pb shielding; Measured: activation, γ(t); Deduced: $T_{1/2}$.

Others: 2008Mi16, 2007Ma58, 2000Zh02, 1970Ne12.

^{207}Pb Levels

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
0.0	1/2$^-$		configuration: $\nu(3p_{1/2})^{-1}$.
569.720 *8*	5/2$^-$		configuration: $\nu(2f_{5/2})^{-1}$.
897.864 *8*	3/2$^-$		configuration: $\nu(3p_{3/2})^{-1}$.
1633.372 *12*	13/2$^+$	0.81 s *4*	$T_{1/2}$: From γ(t) in 1995An36. configuration: $\nu(1i_{13/2})^{-1}$.
2339.918 *13*	7/2$^-$		configuration: $\nu(2f_{7/2})^{-1}$.
2623.941[&] *14*	5/2$^+$		
2662.513[&] *14*	7/2$^+$	0.65 ps *20*	$T_{1/2}$: From B(E3)(W.u.)=38 *9* in 1999Ya07.
2728.038 *13*	9/2$^+$		configuration: $\nu(1g_{9/2})^{-1}$.
3175.676[@] *15*	9/2	>402 fs	$T_{1/2}$: >416 fs in 1998Ye02.
3181.623[@] *19*	1/2,3/2	37 fs *+10−8*	
3202.780[@] *25*	5/2	20 fs *+6−5*	
3218.49[@] *4*	7/2	39 fs *+14−10*	
3225.558[@] *22*	11/2$^+$	>333 fs	
3300.0?			
3302.88[@] *4*	1/2$^+$	8 fs *+4−3*	
3384.646 *16*	9/2$^+$,11/2$^+$	>284 fs	
3414.22 *4*	3/2,5/2,7/2	38 fs *+19−12*	
3415.520 *18*	9/2$^-$	0.16 ps *+58−8*	
3429.899 *20*	9/2,11/2	>437 fs	
3476.417 *16*	9/2	>388 fs	
3509.930 *18*	11/2$^+$	>208 fs	
3524.058 *22*	5/2,7/2	0.16 ps *+17−6*	
3560?			
3582.150 *25*	3/2,5/2,7/2	10 fs *3*	
3584.182 *16*	9/2,11/2	0.11 ps *+8−3*	
3620.513 *23*	11/2$^+$	>243 fs	
3634.473 *24*	3/2,5/2	0.10 ps *+6−3*	
3650.10 *4*		>312 fs	
3673.83 *4*	9/2,11/2	>263 fs	
3711.334 *24*	9/2$^+$	>118 fs	
3726.225 *23*	7/2,9/2	>201 fs	
3829.103 *19*	9/2$^+$,11/2$^+$	>111 fs	
3857?			
3869.39 *6*	9/2$^+$,11/2$^+$	>104 fs	
3888.460 *24*	5/2,7/2	0.12 ps *+20−6*	
3901.0?			
3903.47 *10*		>17 fs	
3927.7 *10*			
3999.835 *25*		0.08 ps *+8−3*	
4064.16 *8*		>37 fs	

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^{207}Pb(n,n′γ) 2000Ka07,1995An36 (continued)

^{207}Pb Levels (continued)

E(level)[†]
4088.3 *10*
4104.1 *10*
4127.9 *10*
4141.1 *10*
4192.4 *10*
4479.0?

† From a least-squares fit to Eγ. The quoted ΔEγ result in a poor fit to the level scheme with about 30 Eγ deviating from the fitted values by more than 3σ.
‡ From 2000Ka07.
# Based on DSAM in 2000Ka07, unless otherwise noted.
@ Probable member of the $\nu(2f_{5/2})^{-1}\otimes 3^-$ sextuplet.
& Probable member of the $\nu(3p_{1/2})^{-1}\otimes 3^-$ doublet.

γ(^{207}Pb)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[a]	Comments
569.720	5/2⁻	569.70 *1*	100	0.0	1/2⁻	E2	Mult.: A_2=+0.18 *3*; A_4=−0.03 *4* (2000Ka07).
897.864	3/2⁻	328.15 *1*	0.4 *1*	569.720	5/2⁻		
		897.92 *1*	99.6 *1*	0.0	1/2⁻	M1+E2	Mult.: A_2=−0.05 *3*; A_4=−0.001 *4* (2000Ka07).
1633.372	13/2⁺	1063.74[#] *1*	100	569.720	5/2⁻		
2339.918	7/2⁻	1442.13 *4*	2 *1*	897.864	3/2⁻	E2	Mult.: A_2=+0.35 *8*; A_4=−0.05 *11* (2000Ka07).
		1770.19 *2*	98 *1*	569.720	5/2⁻	M1+E2	Mult.: A_2=−0.08 *3*; A_4=−0.01 *4* (2000Ka07).
2623.941	5/2⁺	1726.23[#] *2*	82 *1*	897.864	3/2⁻	E1	Mult.: A_2=−0.15 *3*; A_4=−0.01 *4* (2000Ka07).
		2054.29 *2*	18 *1*	569.720	5/2⁻	E1	Mult.: A_2=+0.22 *4*; A_4=−0.05 *5* (2000Ka07); ΔJ=0.
2662.513	7/2⁺	2092.78 *2*	95 *1*	569.720	5/2⁻	E1	Mult.: A_2=−0.17 *3*; A_4=−0.03 *5* (2000Ka07).
		2662.25 *4*	5 *1*	0.0	1/2⁻	[E3]	Mult.: A_2=+0.59 *6*; A_4=+0.17 *8* (2000Ka07).
2728.038	9/2⁺	388.24 *2*	16 *1*	2339.918	7/2⁻	E1	Mult.: A_2=−0.18 *3*; A_4=+0.02 *4* (2000Ka07).
		1094.77[#] *1*	82 *1*	1633.372	13/2⁺	E2	Mult.: A_2=+0.18 *3*; A_4=−0.02 *5* (2000Ka07).
		2158.16 *3*	2 *1*	569.720	5/2⁻	[M2]	Mult.: A_2=+0.11 *10*; A_4=−0.05 *15* (2000Ka07).
3175.676	9/2	447.81[#] *2*	15 *1*	2728.038	9/2⁺	D	Mult.: A_2=+0.39 *6*; A_4=+0.10 *8* (2000Ka07); ΔJ=0.
		835.73 *2*	21 *1*	2339.918	7/2⁻	D	Mult.: A_2=−0.13 *7*; A_4=+0.12 *9* (2000Ka07). B(E1)(W.u.): <1.7×10^{-4} (1998Ye02).
		1542.32 *2*	31 *1*	1633.372	13/2⁺	Q	Mult.: A_2=+0.21 *2*; A_4=−0.03 *4* (2000Ka07).
		2605.56[#] *3*	34 *1*	569.720	5/2⁻	Q	Mult.: A_2=+0.28 *4*; A_4=−0.14 *6* (2000Ka07).
3181.623	1/2,3/2	2283.82 *2*	66 *1*	897.864	3/2⁻	D(+Q)	Mult.: A_2=+0.05 *5*; A_4=−0.01 *7* (2000Ka07).
		2611.90[@b]		569.720	5/2⁻		E_γ: 2612.04 in 2000Ka07 based on energy level difference.
		3181.30 *4*	34 *1*	0.0	1/2⁻	D(+Q)	Mult.: A_2=−0.07 *5*; A_4=+0.08 *6* (2000Ka07).
3202.780	5/2	2305.03 *4*	13.0 *5*	897.864	3/2⁻	D(+Q)	Mult.: A_2=−0.07 *4*; A_4=−0.03 *6* (2000Ka07).
		2632.97 *3*	87.0 *5*	569.720	5/2⁻	D	Mult.: A_2=+0.19 *3*; A_4=−0.04 *5* (2000Ka07); ΔJ=0. B(E1)(W.u.): 4.5×10^{-4} *12* (1998Ye02).
3218.49	7/2	2648.75 *3*	100	569.720	5/2⁻	D	Mult.: A_2=−0.2 *3*; A_4=−0.02 *4* (2000Ka07). B(E1)(W.u.): 2.6×10^{-4} *8* (1998Ye02).
3225.558	11/2⁺	1592.22 *2*	92.0 *6*	1633.372	13/2⁺	M1	Mult.: A_2=−0.28 *3*; A_4=−0.01 *4* (2000Ka07).
		2655.32[#] *7*	8.0 *6*	569.720	5/2⁻	E3	Mult.: A_2=+0.86 *15*; A_4=+0.07 *20* (2000Ka07).
3300.0?		675.7[&b] *5*		2623.941	5/2⁺		
3302.88	1/2⁺	2405.35 *8*	17 *2*	897.864	3/2⁻	E1	Mult.: A_2=−0.17 *9*; A_4=+0.01 *13* (2000Ka07). B(E1)(W.u.): 1.4×10^{-4} *8* (1998Ye02).

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^{207}Pb(n,n′γ) 2000Ka07,1995An36 (continued)

γ(^{207}Pb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[a]	Comments
3302.88	1/2+	3302.77 *4*	83 *2*	0.0	1/2−	E1	Mult.: A_2=−0.06 *3*; A_4=−0.4 *4* (2000Ka07). B(E1)(W.u.): 5.7×10^{-4} *31* (1998Ye02).
3384.646	9/2+,11/2+	656.62 *2*	54 *1*	2728.038	9/2+	M1+E2	Mult.: A_2=+0.38 *4*; A_4=−0.04 *5* (2000Ka07).
		761.4[&] *5*		2623.941	5/2+		
		1044.71 *2*	20 *1*	2339.918	7/2−	E1	Mult.: A_2=−0.17 *4*; A_4=−0.01 *5* (2000Ka07).
		1751.12[#] *2*	26 *1*	1633.372	13/2+	E2	Mult.: A_2=+0.24 *4*; A_4=−0.04 *5* (2000Ka07).
		2486.2[&] *5*		897.864	3/2−		
3414.22	3/2,5/2,7/2	2844.48 *4*	100	569.720	5/2−	D(+Q)	Mult.: A_2=+0.02 *4*; A_4=−0.07 *6* (2000Ka07).
3415.520	9/2−	752.92 *2*	30 *1*	2662.513	7/2+	E1	Mult.: A_2=+0.43 *5*; A_4=−0.02 *7* (2000Ka07); ΔJ=0.
		791.66 *2*	61 *2*	2623.941	5/2+	[M2]	Mult.: A_2=−0.35 *11*; A_4=−0.50 *17* (2000Ka07).
		1075.63 *7*	9 *1*	2339.918	7/2−	M1+E2	Mult.: A_2=+0.35 *20*; A_4=+0.33 *27* (2000Ka07).
3429.899	9/2,11/2	701.88 *3*	39 *1*	2728.038	9/2+	D,Q	Mult.: A_2=+0.54 *9*; A_4=+0.08 *12* (2000Ka07).
		1796.51 *2*	61 *1*	1633.372	13/2+	D	Mult.: A_2=−0.74 *3*; A_4=+0.06 *5* (2000Ka07).
3476.417	9/2	748.40 *2*	19.0 *6*	2728.038	9/2+	D	Mult.: A_2=−0.11 *5*; A_4=+0.06 *7* (2000Ka07).
		1136.42 *2*	38.0 *7*	2339.918	7/2−	D	Mult.: A_2=−0.2 *3*; A_4=−0.04 *5* (2000Ka07).
		1843.09 *2*	44.0 *9*	1633.372	13/2+	Q	Mult.: A_2=+0.13 *7*; A_4=−0.22 *10* (2000Ka07).
3509.930	11/2+	782.00 *2*	33.0 *6*	2728.038	9/2+	M1	Mult.: A_2=−0.80 *4*; A_4=−0.07 *6* (2000Ka07).
		1876.44 *2*	67.0 *6*	1633.372	13/2+	(M1)	Mult.: A_2=+0.48 *4*; A_4=+0.02 *6* (2000Ka07).
3524.058	5/2,7/2	861.57 *2*	59 *1*	2662.513	7/2+	Q(+D)	Mult.: A_2=+0.24 *3*; A_4=+0.01 *4* (2000Ka07).
		2954.21 *4*	41 *1*	569.720	5/2−	D	Mult.: A_2=−0.17 *4*; A_4=+0.07 *5* (2000Ka07).
3560?		2016.2[&b] *5*					
3582.150	3/2,5/2,7/2	958.6 *1*	9 *1*	2623.941	5/2+	Q	Mult.: A_2=+0.68 *24*; A_4=+0.06 *35* (2000Ka07).
		2684.28 *3*	53 *1*	897.864	3/2−	D	Mult.: A_2=−0.18 *2*; A_4=−0.06 *33* (2000Ka07).
		3012.32 *4*	38 *1*	569.720	5/2−	Q(+D)	Mult.: A_2=+0.17 *5*; A_4=−0.03 *7* (2000Ka07).
3584.182	9/2,11/2	921.66 *1*	79 *1*	2662.513	7/2+	D	Mult.: A_2=−0.14 *3*; A_4=−0.03 *5* (2000Ka07).
		1244.33 *3*	15 *1*	2339.918	7/2−	D	Mult.: A_2=−0.21 *9*; A_4=+0.15 *12* (2000Ka07).
		1950.79 *5*	7 *1*	1633.372	13/2+	Q(+D)	Mult.: A_2=+0.24 *10*; A_4=+0.18 *14* (2000Ka07).
3620.513	11/2+	1987.13 *2*	100	1633.372	13/2+	M1+E2	Mult.: A_2=−0.05 *3*; A_4=−0.02 *5* (2000Ka07).
3634.473	3/2,5/2	1010.66 *3*	20 *1*	2623.941	5/2+	D+Q	Mult.: A_2=+0.05 *13*; A_4=−0.32 *20* (2000Ka07).
		2736.46 *3*	80 *1*	897.864	3/2−	D	Mult.: A_2=−0.20 *3*; A_4=−0.06 *5* (2000Ka07).
3650.10		2016.72 *3*	100	1633.372	13/2+	Q	Mult.: A_2=+0.24 *4*; A_4=+0.05 *5* (2000Ka07).
3673.83	9/2,11/2	2040.45 *3*	100	1633.372	13/2+	Q	Mult.: A_2=+0.29 *4*; A_4=−0.01 *6* (2000Ka07).
3711.334	9/2+	1048.90 *5*	15 *1*	2662.513	7/2+	E2	Mult.: A_2=+0.49 *16*; A_4=+0.02 *23* (2000Ka07).
		1087.58 *3*	24 *1*	2623.941	5/2+	E2	Mult.: A_2=−0.14 *5*;A_4=0.001 *70* (2000Ka07).
		3141.20[#] *4*	61 *1*	569.720	5/2−	[M2]	Mult.: A_2=−0.24 *3*; A_4=−0.02 *5* (2000Ka07).
3726.225	7/2,9/2	998.20 *2*	59 *2*	2728.038	9/2+	Q(+D)	Mult.: A_2=+0.35 *3*; A_4=−0.01 *5* (2000Ka07).
		1063.71[@b]	31 *3*	2662.513	7/2+	D+Q	E_γ: 1062.82 in 2000Ka07 based on energy level difference. Mult.: A_2=−0.02 *3*; A_4=−0.04 *5* (2000Ka07).
		1386.16 *6*	10 *2*	2339.918	7/2−	D+Q	Mult.: A_2=−0.59 *19*; A_4=+0.04 *27* (2000Ka07).

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^{207}Pb(n,n′γ) 2000Ka07,1995An36 (continued)

γ(^{207}Pb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[a]	Comments
3726.225	7/2,9/2	2093.0[&] *5*		1633.372	13/2$^+$		
3829.103	9/2$^+$,11/2$^+$	444.31 *2*	64 *1*	3384.646	9/2$^+$,11/2$^+$	(M1+E2)	Mult.: A_2=+0.42 *4*; A_4=+0.04 *6* (2000Ka07).
		1101.21 *2*	37 *1*	2728.038	9/2$^+$	(M1+E2)	Mult.: A_2=+0.20 *5*; A_4=−0.07 *8* (2000Ka07).
3857?		2225.0[&b] *5*		1633.372	13/2$^+$		
3869.39	9/2$^+$,11/2$^+$	2236.00 *5*	100	1633.372	13/2$^+$	Q	Mult.: A_2=+0.52 *7*; A_4=+0.0 *1* (2000Ka07).
3888.460	5/2,7/2	1225.97 *3*	33 *1*	2662.513	7/2$^+$	Q	Mult.: A_2=+0.33 *7*; A_4=−0.02 *10* (2000Ka07).
		2255.38[#] *4*	31 *1*	1633.372	13/2$^+$		Mult.: A_2=+0.53 *7*; A_4=−0.01 *10* (2000Ka07).
		3318.16[#] *5*	37 *1*	569.720	5/2$^-$	D	E_γ: level-energy difference=3318.57. Mult.: A_2=−0.30 *6*; A_4=+0.10 *80* (2000Ka07).
3901.0?		2267.7[&b] *5*		1633.372	13/2$^+$		
3903.47		1175.43 *10*	100	2728.038	9/2$^+$	Q	Mult.: A_2=+0.32 *11*; A_4=+0.16 *14* (2000Ka07).
3927.7		3927.62	100	0.0	1/2$^-$		
3999.835		1375.89 *2*	100	2623.941	5/2$^+$	Q	Mult.: A_2=+0.28 *4*; A_4=+0.02 *6* (2000Ka07).
4064.16		1336.12 *8*	100	2728.038	9/2$^+$	Q(+D)	Mult.: A_2=+0.13 *12*; A_4=+0.06 *17* (2000Ka07).
4088.3		3518.59	100	569.720	5/2$^-$		
4104.1		4104.04	100	0.0	1/2$^-$		
4127.9		3558.18	100	569.720	5/2$^-$		
4141.1		4141.05	100	0.0	1/2$^-$		
4192.4		3622.6	100	569.720	5/2$^-$		
4479.0?		2846.4[&b] *5*		1633.372	13/2$^+$		

[†] From 2000Ka07, unless otherwise noted.
[‡] From 2000Ka07. Iγ′s in 2000Ka07 are normalized with respect to ΣI_γ=100 for each level.
[#] Fitted energy deviates by more than 2σ.
[@] Unresolved doublet in 2000Ka07. Eγ from the level energy difference taken by the evaluators.
[&] From 2000Zh02, not seen elsewhere. ΔEγ not given by the authors, but estimated by the evaluators.
[a] From 2007Ka07, based on γ(θ).
[b] Placement of transition in the level scheme is uncertain.

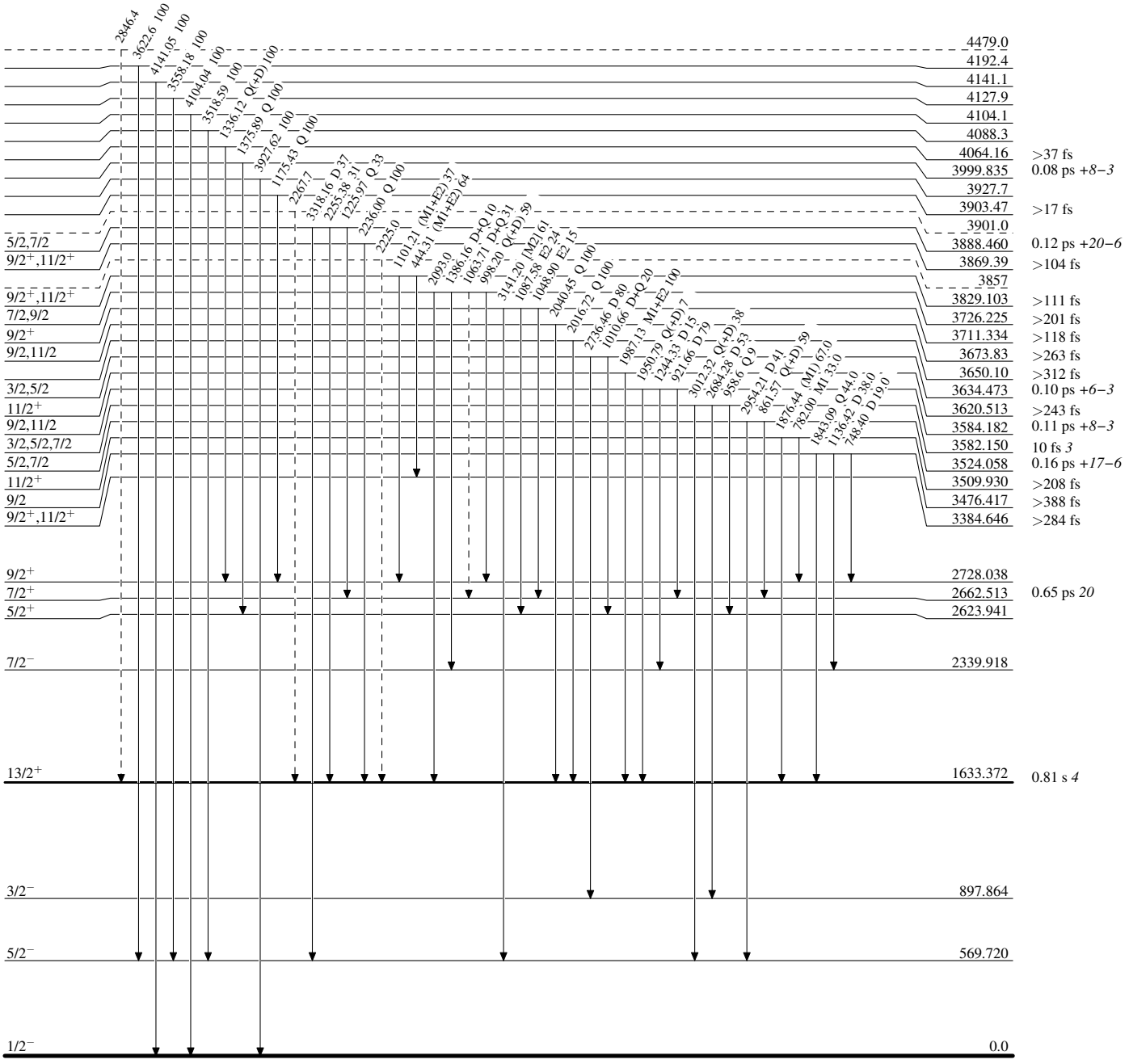
^{207}Pb(n,n′γ) 2000Ka07,1995An36

Legend

Level Scheme

Intensities: % photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{207}_{82}Pb_{125}$

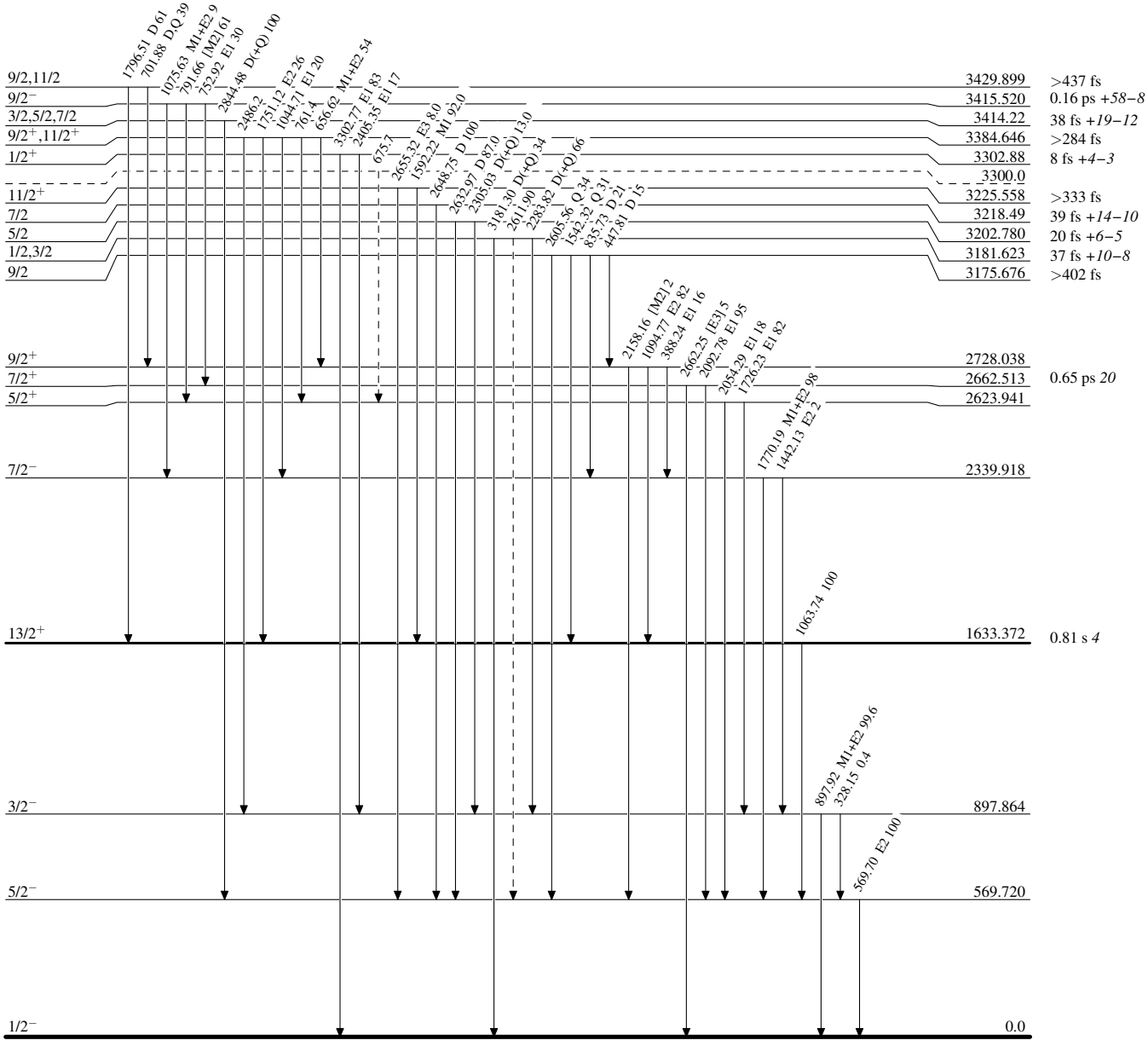
^{207}Pb(n,n′γ) 2000Ka07,1995An36

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{207}_{82}Pb_{125}$