^{82}Se(p,nγ) 1977Do08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. K. Tuli, E. Browne	NDS 157, 260 (2019)	1-Mar-2019

1977Do08: E= 3.0 MeV to 4.0 MeV. Enriched targets. Ge(Li), FWHM= 2.0 keV and 3.1 keV at 1.33 MeV. NaI(Tl). Measured Eγ, Iγ, γγ, p,γ(θ), p,γ(t), excitation functions. Extended data of this measurement are reported in 1977DoZP.
1984Fe01: E= 3.5 MeV and 4.0 MeV. Enriched target. Ge(Li), FWHM= 3 keV at 1.33 MeV. Si(Li), FWHM≈ 3.5 keV at 320 keV. Measured Eγ, Iγ, Ice. Deduced α(K)exp.
1980Fe09: E= 1.0 MeV to 2.8 MeV. Ge(Li). Measured Eγ, excitation functions.

^{82}Br Levels

Hauser-Feshbach calculations reported by 1980Fe09.

E(level)	Jπ†	$T_{1/2}$‡
0	5⁻	
45.9490 *10*	2⁻	6.13# min *5*
75.0621 *15*	(1)⁺	7.2 ns *8*
290.81 *4*	(3)⁻	
362.80 *4*	(2)⁺	
420.07 *3*	(2)	
475.41 *7*	(4)⁻	
541.03 *4*	(2⁺,3⁺)	
627.18 *5*	(2,3⁺)	
641.13 *7*	(3⁺)	
690.67 *6*	(1⁻,2⁻,3⁻)	
760.00 *8*	(1⁺,2,3⁺)	
762.16 *9*		
763.65 *15*	(1)⁺	
822.75 *6*		
846.64 *6*	(1⁺,2,3⁺)	
910.81 *6*	(4,5⁺)	
935.31 *11*		
988.1 *5*		
1007.85 *10*		
1022.49 *5*		
1093.15 *6*		
1109.85 *5*	(1⁻,2,3)	
1155.02 *6*		
1179.39 *7*	(2,3)	
1186.71 *8*		
1216.50 *14*		
1226.60 *8*		
1232.47 *6*		
1243.60 *11*		
1276.24 *6*	(1,2,3⁺)	

† From Adopted Levels.
‡ From p,γ(t) (1977Do08),except where noted.
# From Adopted Levels.

γ(^{82}Br)

α(K)exp from 1984Fe01 assuming the 244.9γ to be pure M1 as obtained from the p,γ(θ) measurement of 1977Do08.

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡d]	α[c]	Comments
29.113[#] 1	18.3 9	75.0621	(1)$^+$	45.9490	2$^-$				
45.949[#] 1	0.24[b] 7	45.9490	2$^-$	0	5$^-$				
184.60 5	1.66 8	475.41	(4)$^-$	290.81	(3)$^-$	(M1+E2)	<0.3	0.025 3	α(K)exp=0.020 4 α(K)=0.0222 25; α(L)=0.0025 4; α(M)=0.00039 5 α(N)=3.6×10^{-5} 5
208.65 9	0.26 5	1216.50		1007.85					
244.86 5	11.2 6	290.81	(3)$^-$	45.9490	2$^-$	(M1)[a]		0.01083	α(K)exp=(0.00965) α(K)=0.00961 14; α(L)=0.001039 15; α(M)=0.0001651 24 α(N)=1.540×10^{-5} 22
250.20 5	2.46 15	541.03	(2$^+$,3$^+$)	290.81	(3)$^-$	(E1)		0.00572	α(K)exp=0.0062 23 α(K)=0.00509 8; α(L)=0.000538 8; α(M)=8.51×10^{-5} 12 α(N)=7.88×10^{-6} 11
264.38 5	1.72 15	627.18	(2,3$^+$)	362.80	(2)$^+$	(E1,M1)		0.0069 21	α(K)exp=0.007 4 α(K)=0.0061 18; α(L)=6.6×10^{-4} 20; α(M)=1.04×10^{-4} 32 α(N)=9.7×10^{-6} 30
287.75 4	16.8 8	362.80	(2)$^+$	75.0621	(1)$^+$	(M1+E2)	<0.3	0.0077 5	α(K)exp=0.0062 11 α(K)=0.0068 5; α(L)=0.00074 5; α(M)=0.000117 8 α(N)=1.09×10^{-5} 7
315.79 6	1.69 18	1226.60		910.81	(4,5$^+$)	(E1)		0.00298	α(K)exp=0.0034 7 α(K)=0.00265 4; α(L)=0.000280 4; α(M)=4.44×10^{-5} 7 α(N)=4.12×10^{-6} 6
340.2[@e] 2	1.04[@] 7	760.00	(1$^+$,2,3$^+$)	420.07	(2)	(E2+M1)	>0.7	0.0085 19	α(K)exp=0.0080 20 α(K)=0.0075 17; α(L)=0.00083 19; α(M)=0.00013 3 α(N)=1.2×10^{-5} 3
345.02 4	10.2 6	420.07	(2)	75.0621	(1)$^+$	D(+Q)			α(K)exp=0.0035 7
350.42 14	0.55 9	641.13	(3$^+$)	290.81	(3)$^-$				
^{x}369.60 13	0.21 5								
374.15 5	1.17 9	420.07	(2)	45.9490	2$^-$				
^{x}377.48 21	0.26 6								
395.39[e] 10	0.30 10	1022.49		627.18	(2,3$^+$)				
397.20 14	0.70 20	760.00	(1$^+$,2,3$^+$)	362.80	(2)$^+$				
400.48[e] 16	0.30 10	475.41	(4)$^-$	75.0621	(1)$^+$				
402.67 5	3.0 4	822.75		420.07	(2)				
419.24 21	0.08 3	1179.39	(2,3)	760.00	(1$^+$,2,3$^+$)				
^{x}421.74 20	0.08 3								
426.69 20	0.25 6	846.64	(1$^+$,2,3$^+$)	420.07	(2)				

$^{82}_{35}Br_{47}$-2

γ(^{82}Br) (continued)

$E_γ$[†]	$I_γ$[†]	E_i(level)	$J_i^π$	E_f	$J_f^π$	Mult.[‡]	α[c]	Comments
[x]432.5 *3*	0.16 *6*							
[x]446.2 *3*	0.08 *3*							
[x]453.25 *9*	0.61 *8*							
459.90 *9*	0.30 *8*	935.31		475.41	$(4)^-$			
465.98 *5*	2.47 *27*	1093.15		627.18	$(2,3^+)$			
483.82 *5*	3.5 *3*	846.64	$(1^+,2,3^+)$	362.80	$(2)^+$	D		α(K)exp=0.0011 *6*
495.10 *5*	3.7 *3*	541.03	$(2^+,3^+)$	45.9490	2^-	(E1)	9.21×10^{-4}	α(K)exp≤0.0014 α(K)=0.000820 *12*; α(L)=8.62×10^{-5} *12*; α(M)=1.366×10^{-5} *20* α(N)=1.273×10^{-6} *18*
[x]498.90 *17*	0.52 *9*							
[x]523.82 *10*	0.48 *7*							
[x]528.21 *8*	0.57 *7*							
[x]541.82 *9*	0.52 *7*							
566.02 *8*	2.10 *25*	641.13	(3^+)	75.0621	$(1)^+$			
581.40 *20*	0.25 *9*	627.18	$(2,3^+)$	45.9490	2^-			
595.30 *20*	0.50 *20*	641.13	(3^+)	45.9490	2^-			
599.42 *20*	0.45 *20*	1226.60		627.18	$(2,3^+)$			
602.40 *9*	1.09 *18*	1022.49		420.07	(2)			
625.3 *5*	0.15 *9*	988.1		362.80	$(2)^+$			
[x]633.40 *10*	0.35 *10*							
644.72[&] *6*	4.6[&] *5*	690.67	$(1^-,2^-,3^-)$	45.9490	2^-	(M1)	1.08×10^{-3}	α(K)exp=0.00089 *24* α(K)=0.000964 *14*; α(L)=0.0001018 *15*; α(M)=1.616×10^{-5} *23* α(N)=1.515×10^{-6} *22*
[x]656.35 *5*	5.2 *5*							
[x]667.9 *3*	0.16 *8*							
[x]668.9 *4*	0.17 *9*							
684.90 *9*	0.50 *10*	760.00	$(1^+,2,3^+)$	75.0621	$(1)^+$			
687.10 *10*	0.90 *20*	762.16		75.0621	$(1)^+$			
[x]694.30 *9*	1.69 *17*							
[x]702.75 *15*	0.45 *15*							
[x]706.20 *12*	0.30 *10*							
716.18 *15*	5.5 *7*	762.16		45.9490	2^-			
717.70 *15*	6.6 *8*	763.65	$(1)^+$	45.9490	2^-			
730.17 *12*	0.31 *5*	1093.15		362.80	$(2)^+$			
735.24 *14*	0.25 *5*	1155.02		420.07	(2)			
[x]742.55 *11*	0.35 *6*							
747.15 *7*	1.13 *9*	1109.85	$(1^-,2,3)$	362.80	$(2)^+$			
759.24 *29*	0.12 *4*	1179.39	(2,3)	420.07	(2)			
771.67 *16*	1.36 *13*	846.64	$(1^+,2,3^+)$	75.0621	$(1)^+$			
[x]791.30 *21*	0.37 *9*							
802.41 *11*	0.89 *15*	1093.15		290.81	$(3)^-$			
[x]815.21 *7*	1.83 *19*							
[x]827.61 *9*	0.34 *12*							

γ(^{82}Br) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	Comments
^{x}838.89 *13*	1.07 *12*						
856.15 *9*	1.43 *15*	1276.24	(1,2,3$^+$)	420.07	(2)		E_γ: from fig.4 in 1977Do08. E= 856.80 keV *9* in table 2 in 1977Do08, E= 856.2 keV *4* from 1984Fe01.
^{x}868.47 *15*	0.33 *11*						
^{x}870.08 *18*	0.25 *12*						
880.79 *10*	0.57 *9*	1243.60		362.80	(2)$^+$		
^{x}891.10 *7*	1.75 *18*						
895.90 *7*	1.87 *18*	1186.71		290.81	(3)$^-$		
^{x}899.96 *23*	0.58 *9*						
910.80 *6*	2.85 *28*	910.81	(4,5$^+$)	0	5$^-$	D	α(K)exp=0.00050 *28*
^{x}920.55 *21*	0.26 *6*						
932.78 *10*	0.42 *15*	1007.85		75.0621	(1)$^+$		
^{x}942.18 *25*	0.17 *9*						
947.25 *20*	0.20 *8*	1022.49		75.0621	(1)$^+$		
^{x}949.91 *22*	0.13 *6*						
976.55 *5*	3.1 *4*	1022.49		45.9490	2$^-$		
^{x}988.60 *17*	0.31 *6*						
^{x}1009.50 *18*	0.55 *15*						
1034.70 *6*	2.46 *26*	1109.85	(1$^-$,2,3)	75.0621	(1)$^+$		
^{x}1055.41 *16*	0.30 *6*						
^{x}1060.22 *9*	0.52 *8*						
^{x}1068.65 *29*	0.12 *4*						
1079.89 *6*	1.07 *15*	1155.02		75.0621	(1)$^+$		
^{x}1088.00 *20*	0.17 *8*						
^{x}1092.30 *20*	0.17 *8*						
^{x}1101.70 *16*	0.27 *6*						
^{x}1107.62 *12*	0.37 *6*						
^{x}1117.31 *10*	0.44 *7*						
^{x}1125.38 *6*	1.05 *11*						
1133.45 *7*	0.70 *9*	1179.39	(2,3)	45.9490	2$^-$		
^{x}1143.45 *10*	0.54 *10*						
^{x}1152.14 *21*	0.22 *6*						
1157.40 *6*	1.78 *20*	1232.47		75.0621	(1)$^+$		
^{x}1168.78 *10*	0.51 *8*						
^{x}1182.0 *3*	0.17 *7*						
1186.52 *11*	0.50 *8*	1232.47		45.9490	2$^-$		
^{x}1199.49 *28*	0.50 *12*						
1201.14 *13*	1.08 *17*	1276.24	(1,2,3$^+$)	75.0621	(1)$^+$		
^{x}1223.78 *18*	0.23 *7*						
1230.30 *9*	0.66 *9*	1276.24	(1,2,3$^+$)	45.9490	2$^-$		
^{x}1259.60 *11*	0.39 *7*						
^{x}1275.89 *17*	0.19 *7*						
^{x}1295.56 *10*	0.62 *9*						
^{x}1307.20 *25*	0.42 *12*						

γ(^{82}Br) (continued)

E_γ †	I_γ †	E_i(level)	E_γ †	I_γ †	E_i(level)	E_γ †	I_γ †	E_i(level)	E_γ †	I_γ †	E_i(level)
x1337.4 *7*	0.25 *8*		x1638.60 *18*	0.24 *8*		x1947.85 *21*	0.39 *9*		x2317.80 *27*	0.06 *4*	
x1352.19 *12*	0.37 *9*		x1647.72 *20*	0.65 *12*		x1978.50 *20*	0.18 *6*		x2330.40 *10*	0.27 *7*	
x1356.65 *20*	0.33 *7*		x1654.1 *3*	0.15 *6*		x1990.48 *12*	0.66 *11*		x2338.15 *12*	0.18 *6*	
x1374.23 *25*	0.17 *6*		x1667.85 *12*	0.33 *8*		x2004.10 *18*	0.21 *6*		x2353.6 *5*	0.08 *6*	
x1380.34 *10*	0.54 *10*		x1677.05 *11*	0.51 *9*		x2009.20 *4*	0.11 *5*		x2358.1 *4*	0.11 *4*	
x1394.62 *12*	0.37 *8*		x1692.8 *4*	0.08 *4*		x2014.2 *4*	0.07 *4*		x2370.7 *3*	0.04 *3*	
x1416.85 *10*	0.75 *11*		x1703.75 *12*	0.57 *9*		x2025.7 *4*	0.07 *4*		x2387.18 *11*	0.37 *8*	
x1426.01 *20*	0.27 *8*		x1722.1 *5*	0.06 *3*		x2047.15 *23*	0.17 *6*		x2403.1 *4*	0.09 *5*	
x1446.60 *22*	0.71 *12*		x1752.12 *23*	0.19 *6*		x2053.34 *14*	0.25 *7*		x2408.8 *6*	0.06 *3*	
x1487.00 *11*	0.42 *8*		x1759.65 *11*	0.55 *9*		x2063.25 *13*	0.29 *8*		x2419.93 *16*	0.23 *7*	
x1495.31 *8*	0.64 *10*		x1791.49 *12*	0.44 *9*		x2068.00 *10*	0.42 *8*		x2426.45 *11*	0.33 *8*	
x1504.85 *25*	0.14 *5*		x1802.4 *3*	0.10 *5*		x2075.84 *22*	0.12 *4*		x2443.35 *13*	0.22 *7*	
x1525.4 *5*	0.07 *3*		x1814.76 *17*	0.26 *6*		x2097.84 *21*	0.16 *5*		x2455.0 *5*	0.04 *3*	
x1529.5 *5*	0.07 *3*		x1820.19 *11*	0.65 *9*		x2124.1 *4*	0.08 *4*		x2463.9 *4*	0.06 *4*	
x1539.89 *19*	0.13 *5*		x1831.85 *12*	0.64 *12*		x2132.25 *12*	0.30 *7*		x2496.1 *4*	0.06 *4*	
x1548.7 *6*	0.08 *4*		x1844.25 *15*	0.44 *8*		x2146.72 *11*	0.37 *7*		x2501.42 *25*	0.13 *4*	
x1554.62 *10*	1.25 *12*		x1849.40 *18*	0.21 *6*		x2175.4 *7*	0.26 *6*		x2529.86 *18*	0.07 *3*	
x1562.3 *6*	0.05 *3*		x1874.41 *17*	0.25 *6*		x2180.97 *19*	0.26 *5*		x2602.6 *4*	0.06 *4*	
x1579.11 *12*	0.64 *11*		x1878.80 *12*	0.42 *8*		x2227.10 *14*	0.27 *8*		x2642.25 *24*	0.06 *4*	
x1584.82 *21*	0.30 *8*		x1897.3 *4*	0.15 *5*		x2265.28 *13*	0.29 *9*				
x1605.8 *4*	0.06 *3*		x1903.52 *22*	0.22 *6*		x2284.3 *5*	0.08 *4*				
x1622.32 *26*	0.12 *5*		x1919.8 *5*	0.10 *5*		x2295.05 *24*	0.14 *6*				

† From 1977Do08. Above 1.3 MeV data are from 1977DoZP.
‡ From α(K)exp (1984Fe01), if not indicated otherwise.
# From (n,γ) measurement (1978Do06) of the same authors (1977Do08) using a bent-crystal spectrometer.
@ From 1984Fe01. Not observed by 1977Do08.
& Placed by 1984Fe01. Unplaced in 1977Do08.
a Dipole with negligible quadrupole admixture from p,γ(θ) (1977Do08). π from adopted J^π.
b Since 45 level has $T_{1/2}$ of 6 min I(45γ) is time dependent. From paper (1977Do08) it is not clear what this intensity represents.
c Additional information 1.
d If No value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.
e Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

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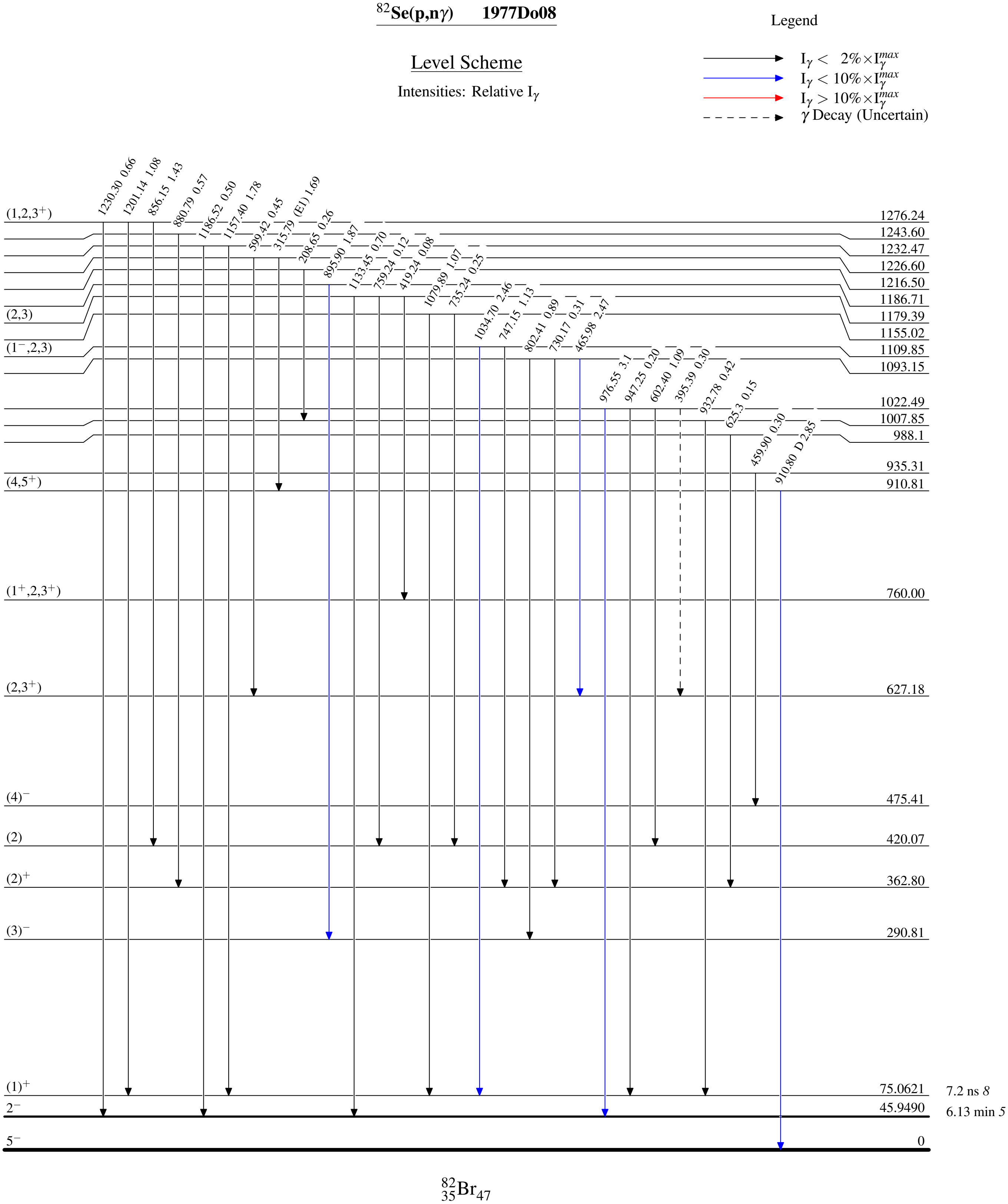
Level Scheme

Intensities: Relative I_γ



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Level Scheme (continued)

Intensities: Relative I_γ

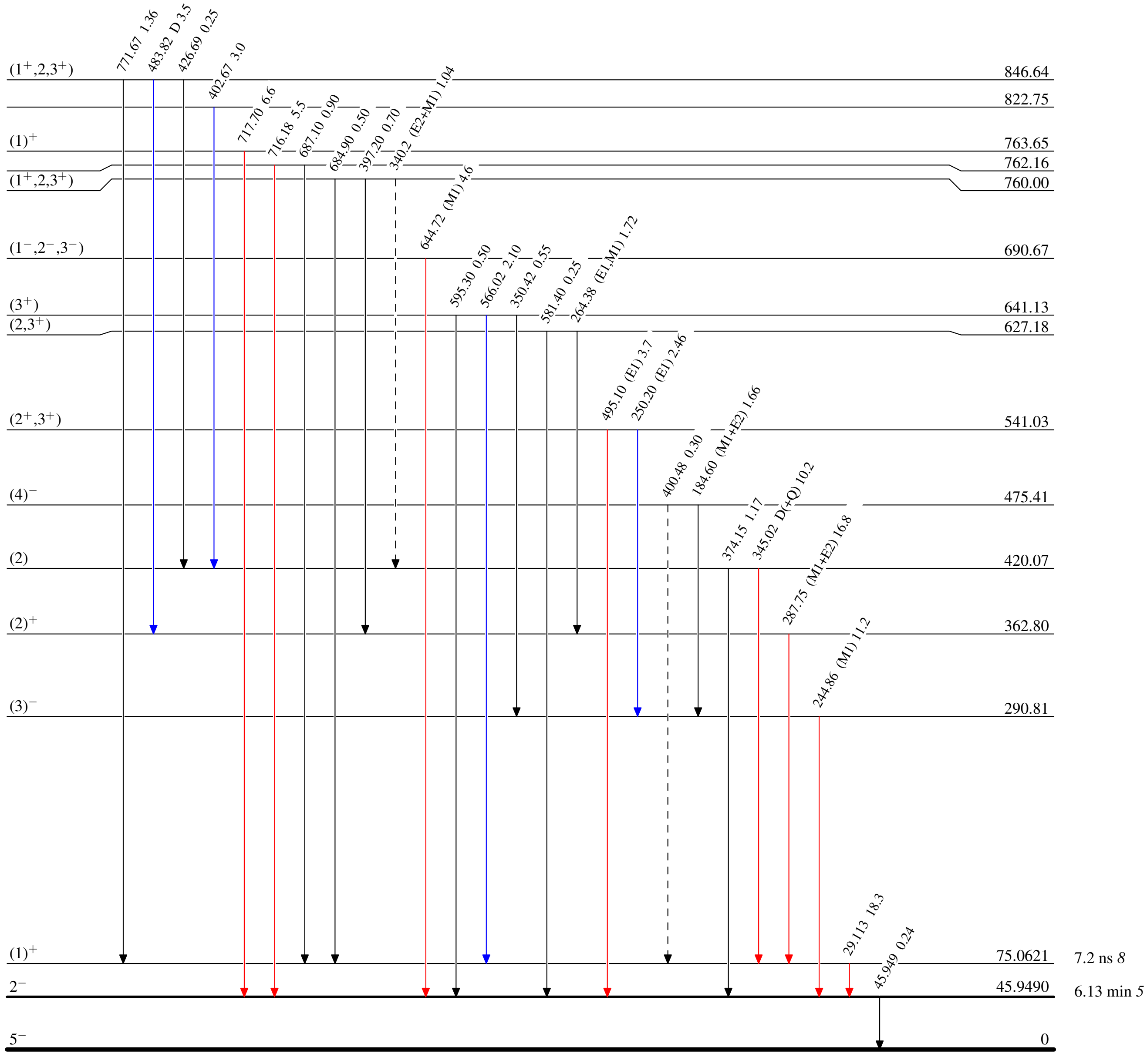
Legend

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

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

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

γ Decay (Uncertain)



$^{82}_{35}Br_{47}$