Coulomb excitation

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	ENSDF	1-Jul-2008

1995Sv01 (x,x′γ) x=^{208}Pb E=870 MeV x=^{58}Ni E=165.5 MeV x=^{16}O E=48 MeV.
1982Le07 (x,x′γ) x=^{40}Ar E=120, 129.1 MeV. Authors compare yields for high-spin states to boson expansion and interacting boson model predictions.
1980Br01 (x,x′γ) x=^{32}s E=72-80 MeV.
1977Ma41 (x,x′γ) x=α E=8.5 MeV, x=^{16}O E=33 MeV.
1976Ha21 (x,x′γ) x=^{16}O E=37.2-38.5 MeV.
1974Hu01 (x,x′γ) x=^{16}O E=36 MeV.
1972Lu08 (x,x′) x=^{32}s E=53.6 MeV.
1971WaZT (x,x′γ) x=α E=8.15 MeV, x=^{12}C E=30,33,36 MeV, x=^{16}O E=35 MeV, x=^{35}Cl E=50 MeV.
1971Ro09 (x,x′γ) x=α E=10.1 MeV.
1971Ha08 (x,x′) x=α E=7-10 MeV, x=^{16}O E=28-42.
1971Bo08 (x,x′γ) x=α E=8.0 MeV.
1969Ro05 (x,x′γ) x=α E=9-10 MeV.
Others: 1961St02, 1962Ec01, 1962Ga10, 1969He11.

^{108}Pd Levels

γγ(θ): from (497γ)(434γ)(θ) of 1971Ro09 one obtains J(931 level)=2 and δ(497γ)=−3.1 *4* given J(434 level)=2.
B(E2) values are from 1995Sv01, except where noted otherwise.

E(level)[†]	Jπ[#]	$T_{1/2}$	Comments
0	0^+		
433.9	2^+	23.9 ps *7*	B(E2)↑=0.761 *23*; g=0.36 *3*; Q=−0.53 *6* $T_{1/2}$: from B(E2). B(E2)↑: weighted average of values of 1969Ro05 (0.76 *5*), 1971Bo08 (0.79 *5*), 1971Ha08 (0.70 *7*). 1962Ec01 (0.78 *6*), 1958St32 (0.74 *5*), 1962Er05 (0.82 *12*), 1956Te26 (0.78 *12*), and 0.76 *+11−7* (1995Sv01). g: from 1980Br01, γ(θ,h), recoil through thin magnetized Fe layer on Cu backing. Dynamic field calibrated using g-factor=0.398 *21* for 2^+ level in ^{106}Pd (1989Ra17). Others: 0.37 *4* (1974Hu01), γ(θ,h), IMPAC. Transient field calculated in framework of Lindhard-Winther model with inclusion of decays-in-flight corrections; 0.40 *6* (1969He11), IMPAC. Authors′ value (0.30 *4*) recalculated by 1974Hu01 to correct for effect of static- and transient-field angular shifts. Note, γ(^{106}Pd)=0.32 *6* (1974Hu01), 0.37 *7* (1969He11 as corrected by 1974Hu01); 0.42 *5* (1979LaZL). Q: weighted average of values of 1971Ha08 (−0.58 *13*), 1972Lu08 (−0.51 *6*) using reorientation effect, and 1976Ha21 (−0.66 *18*) using the reorientation precession technique. 1976Ha21 determined that excitation via the second 2^+ level interferes constructively with the direct excitation. The above authors also give Q values for the case of destructive interference. Others: 1971WaZT determined Q=Q(^{110}Pd 2^+)+0.11 *4* and 1977Ma41 determined Q(^{110}Pd 2^+)+0.24 *5*.
931.1	2^+	6.8 ps *11*	B(E2)↑=0.0115 *18* Jπ: x,931γ(θ) consistent only with J=2 (1969Ro05). $T_{1/2}$: from B(E2) and %Iγ(931γ)=19.4 *12*. B(E2)↑: weighted av: 0.0096 *10* (1995Sv01), 0.0170 *14* (1969Ro05), 0.0095 *15* (1961St02), 0.0112 *26* (1962Ga10).
1048.2	4^+	2.8 ps *3*	B(E2)↑=0.42 *4* B(E2)↑: B(E2)(614γ 2^+ to 4^+) weighted av: 0.20 *4* (1995Sv01), 0.50 *7* (1969Ro05). $T_{1/2}$: from B(E2) and Iγ(614γ)=100%.
1052.8	0^+	4.0 ps *4*	B(E2)↑: B(E2)(619γ 2^+ to 0^+)=0.031 *3*. weighted av: 0.032 *3* (1995Sv01), 0.027 *6* (1969Ro05). $T_{1/2}$: from B(E2) and Iγ(618γ)=100%.

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Coulomb excitation (continued)

^{108}Pd Levels (continued)

E(level)[†]	J^{π}[#]	$T_{1/2}$	Comments
1314.2	0^+	>25 ps	B(E2)↑: B(E2)(880γ 2^+ to 0^+)<0.00072; B(E2)(383γ 2^+ to 0^+)<0.0115. $T_{1/2}$: from B(E2)(880γ) with Iγ (880γ)=82.7% *17*.
1441.2	2^+	4.8 ps *+12−10*	B(E2)↑: B(E2)(389γ 2^+ to 0^+)=0.90 *+10−9*; B(E2)(393γ 4^+ to 2^+)=0.077 *+19−13*; B(E2)(510γ 2^+ to 2^+)=0.035 *+13−16*; B(E2)(1007γ 2^+ to 2^+)=0.0051 *+29−6*; B(E2)(1441γ 0^+ to 2^+)=0.00144 *+16−21*. $T_{1/2}$: from B(E2)(1441γ) with Iγ (1441γ)=15.6% *27*.
1625.2	4^+	1.69 ps *20*	B(E2)↑: B(E2)(184γ 2^+ to 4^+)=0.020 *+15−6*; B(E2)(576γ 4^+ to 4^+)=0.092 *+17−14* B(E2)(694γ 2^+ to 4^+)=0.303 *+35−30*; B(E2)(1191γ 2^+ to 4^+)≤0.0016. $T_{1/2}$: from B(E2)(694γ) with Iγ (694γ)=80% *4*.
1771.2	6^+	0.88 ps *10*	B(E2)↑: B(E2)(723γ 4^+ to 6^+)=0.47 *5*. $T_{1/2}$: from B(E2).
1956[‡]	4^+	4.7 ps *18*	B(E2)↑: B(E2)(331γ 4^+ to 4^+)=0.006 *+15−6*; B(E2)(908γ 4^+ to 4^+)<0.0054; B(E2)(1025γ 2^+ to 4^+)=0.016 *+6−4*. $T_{1/2}$: from B(E2)(1025γ) with Iγ (694γ)>68%. Value chosen is the midpoint of values for branching of 68% and 100%.
2046.6	3^-	<1 ps	B(E3)↑=0.093 *26* (1969Ro05) $T_{1/2}$: from Doppler-broadening of 1612γ in coin spectrum (1969Ro05). B(E3)↑: from yield of 1612γ and assumption that %Iγ(1612γ)=100.
2422[‡] *1*	6^+	1.01 ps *+43−10*	B(E2)↑: B(E2)(798γ 4^+ to 6^+)=0.25 *+3−8*. $T_{1/2}$: from B(E2).
2548.4 *1*	8^+	0.44 ps *5*	B(E2)↑: B(E2)(777γ 6^+ to 8^+)=0.59 *+8−5*. $T_{1/2}$: from B(E2).

[†] Rounded-off values from adopted gammas, except where noted otherwise.
[‡] From 1995Sv01. The evaluator has assigned an uncertainty of 1 keV.
[#] From Adopted Levels.

γ(^{108}Pd)

E_γ[‡]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	Comments
117.1		1048.2	4^+	931.1	2^+	[E2]		I$_\gamma$: Iγ=0.0004 *+5−4*.
121.6		1052.8	0^+	931.1	2^+	[E2]		I$_\gamma$: Iγ=0.027 *+3−7*.
184		1625.2	4^+	1441.2	2^+	[E2]		I$_\gamma$: Iγ=0.0085 *+64−26*.
331		1956	4^+	1625.2	4^+	[E2]		I$_\gamma$: Iγ=0.23 *+58−21*.
383.2[†]		1314.2	0^+	931.1	2^+	[E2]		
388.6	30 *3*	1441.2	2^+	1052.8	0^+	[E2]		B(E2)(W.u.)=4.4×10^2 *+11−13*
393		1441.2	2^+	1048.2	4^+	[E2]		I$_\gamma$: Iγ=25 *+6−4*.
433.9	100	433.9	2^+	0	0^+	[E2]		B(E2)(W.u.)=50.4 *16*
497.2	100 *9*	931.1	2^+	433.9	2^+	(M1+E2)	−3.1 *4*	B(M1)(W.u.)=0.0019 *6*; B(E2)(W.u.)=63 *13* δ: from (497γ)(434γ)(θ) (1971Ro09). Other: -(5.2 *+25−14*) from 497γ(θ) (1969Ro05). $\Delta\pi$=no from decay scheme.
510.1		1441.2	2^+	931.1	2^+	[E2]		I$_\gamma$: Iγ=23 *+9−11*.
576 *1*		1625.2	4^+	1048.2	4^+	[E2]		I$_\gamma$: Iγ=21 *+4−3*.
614.3	100 *10*	1048.2	4^+	433.9	2^+	[E2]		B(E2)(W.u.)=76 *14*
618.8	100 *10*	1052.8	0^+	433.9	2^+	[E2]		B(E2)(W.u.)=51 *9*
[x]635[@] *1*								
694[@] *1*	100 *11*	1625.2	4^+	931.1	2^+	[E2]		B(E2)(W.u.)=66 *13*
722.9	100	1771.2	6^+	1048.2	4^+	[E2]		B(E2)(W.u.)=107 *13*
777.2[†]	100	2548.4	8^+	1771.2	6^+	[E2]		B(E2)(W.u.)=148 *17*
798[@] *1*	100	2422	6^+	1625.2	4^+	[E2]		B(E2)(W.u.)=57 *+6−25*

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Coulomb excitation (continued)

$\gamma(^{108}Pd)$ (continued)

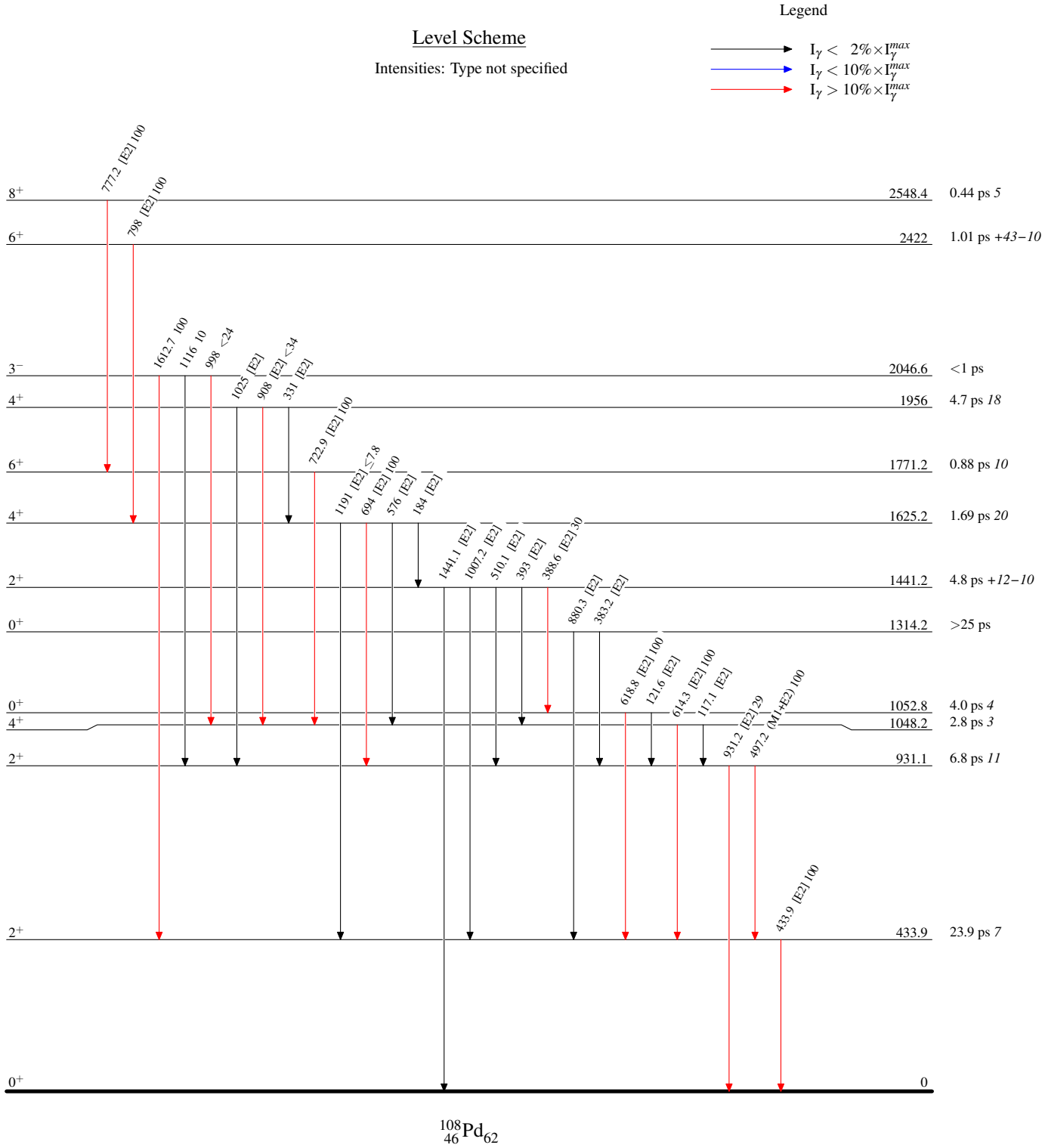
E_γ ‡	I_γ #	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
880.3		1314.2	0^+	433.9	2^+	[E2]	
908 @ *1*	<34	1956	4^+	1048.2	4^+	[E2]	B(E2)(W.u.)=6 *+10–6*
931.2	29 *3*	931.1	2^+	0	0^+	[E2]	B(E2)(W.u.)=0.87 *18*
998 †	<24 &	2046.6	3^-	1048.2	4^+		
1007.2		1441.2	2^+	433.9	2^+	[E2]	I_γ: Iγ=100 *+57–12*.
1025		1956	4^+	931.1	2^+	[E2]	I_γ: Iγ=100 *+38–25*.
x 1027 *1*							
1116 †	10 *10*	2046.6	3^-	931.1	2^+		
1191	≤7.8	1625.2	4^+	433.9	2^+	[E2]	B(E2)(W.u.)=0.17 *17*
1441.1		1441.2	2^+	0	0^+	[E2]	I_γ: Iγ=34 *+4–5*.
1612.7 *3*	100 &	2046.6	3^-	433.9	2^+		

† Not seen. Energy from E(level) differences.
‡ Rounded-off values from adopted gammas, except where noted otherwise.
# Relative photon branching from each level. Data are deduced by the evaluator from the B(E2) values of 1995Sv01.
@ From 1995Sv01. The evaluator has assigned an uncertainty of 1 keV.
& From 1969Ro05.
x γ ray not placed in level scheme.

Coulomb excitation

Level Scheme

Intensities: Type not specified



$^{108}_{46}Pd_{62}$