^{208}Pb(γ,γ'),(pol γ,γ')

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 108,1583 (2007)	1-Jun-2007

1963Fl04 source=^{56}Fe(n,γ), E(γ)=7279.
1964Ar01 source=^{56}Fe(n,γ), E(γ)=7279.
1964Ar21 source=^{56}Fe(n,γ), E(γ)=7279.
1965Gi04 source=^{56}Fe(n,γ), E(γ)=7279; ^{27}Al(n,γ), E(γ)=6980.
1966Do03 source=^{14}N(n,γ), E(γ)=7297.
1967Gi15 source=^{56}Fe(n,γ), E(γ)=7279. Reanalysis of data of 1965Gi04.
1967Pr15 source=^{56}Fe(n,γ), E(γ)=7279.
1968Ka07 source=^{56}Fe(n,γ), E(γ)=7279.
1969Ra09 source=^{56}Fe(n,γ), E(γ)=7279.
1970Mo26 source=^{56}Fe(n,γ), E(γ)=7279.
1971Be22 source=^{56}Fe(n,γ), E(γ)=7279.
1972Wo21 see 1970Mo26.
1973Sw01 source=Doppler−broadened 7117γ from ^{19}F(p,$\alpha\gamma$).
1974Mo15 source=^{56}Fe(n,γ), E(γ)=7279.
1974Sc08 source=Doppler−broadened 7117γ from ^{19}F(p,$\alpha\gamma$).
1974Sw02 source=bremsstrahlung, E(max)=E(level)+100 keV.
1974Sw05 source=bremsstrahlung, E(max)=E(level)+100 to 200 keV.
1976Sm03 source=Doppler shifted 7686γ from 1354 resonance In ^{34}S(p,γ).
1976Sp05 source=Doppler shifted 7068γ from 1974 resonance In ^{34}S(p,γ).
1977Co10 source=bremsstrahlung, E(max)=6600, 9700.
1977Sw06 source=bremsstrahlung, E(max)=4950.
1977Ye01 source=Doppler broadened 7117γ from ^{19}F(p,$\alpha\gamma$).
1978Kn06 source=variable monoenergetic Compton scattered ^{58}Ni(n,γ).
1979La01 source=variable monoenergetic photons, FWHM=50-150 keV.
1979Na01 source=variable monoenergetic plane-polarized photons.
1980Ch22 source=bremsstrahlung, E(max)=7.0,7.5,7.6,8.0,8.5,10.4 MeV.
1981Ac02 source=bremsstrahlung.
1981Bi11 source=Doppler broadened γ's from ^{34}S(p,γ). E(γ)=4841, 7067.
1981Le09 source=In−flight annihilation of positrons, E(γ)=10-100 MeV.
1982St03 source=bremsstrahlung, tagged photons, E(γ)=9-12 MeV.
1982Wi06 source=bremsstrahlung, E(max)=10 MeV linearly polarized.
1985Be18 source=Ni(n,γ), E(γ)=8999, 10055, 11388.
1988Sc16 source=bremsstrahlung and In-flight annihilation of positrons.
1992Da09 source=bremsstrahlung, polarized tagged photons.
1994Oh06 source=polarized LASER Compton photons.
2000En08 source=bremsstrahlung, E(max)=6.75 MeV. See 2003En07.
2001RyZZ source=bremsstrahlung, E(max)=9 MeV.
Additional information 1.
2002Ry06 source=bremsstrahlung, E(max)=9 MeV.
2003En07 source=bremsstrahlung, E(max)=6.75 MeV.
1981Le09 obtain R=4.90 fm *15* for the half-density radius of all currents, including the exchange components.
No branching from the excited levels to levels other than the g.s. have been observed. Values of $\Gamma_{\gamma 0}/\Gamma$ from 1980Ch22 are given In comments. The quoted asymmetric uncertainties are statistical only. The authors state that the systematic uncertainty should Be No larger than 10%.

See 1967Gi15 For α Reanalysis Of Data For The 7279 Resonance

γ's FWHM=175 keV

Superseded By 1988Sc16

FWHM=125 keV

E(max)=7 MeV Unpolarized

E(γ)=10-100 MeV

Eγ=16-30 MeV

E=1-10 MeV With FWHM=2.9% At Eγ=5500

Summary Of Resonance Parameters For 7279 Level

$\Gamma_{\gamma 0}$ (eV)	$\Gamma_{\gamma 0}/\Gamma$	ε & (eV)	J @	Reference
0.80 8	≈ 0.7	4.8 4		1963Fl04
0.80 3	≈ 1	8.0#10		1964Ar01
(0.80)	(1)	6.5 10		1964Ar21
0.84 5	0.60 +34-16	3.9 3		1965Gi04
0.93 9	0.55 +30-16	4.0 3		1967Gi15
0.84 3	(1)	3.9 3	1	1967Pr15
0.56 8	(1)	7.5 6		1968Ka07
0.68 3	0.95 +5-17	8.00 14	1	1969Ra09
0.78 6	1.00 +0-8	7.1 3	1^+	1970Mo26
0.78 3	0.62 4			1971Be22
(0.78)	(1)	7.3 1		1974Mo15
0.78 2	1.00	7.3 1	1^+	ADOPTED Values

& ε Is The Energy Difference Between The Source γ (with Recoil Energy Subtracted) And The Resonant Level. For The 7279 Level, E(recoil-corrected γ)>E(level) (1964Ar21)
@ Spin Determined By γ(θ), Parity By γ(pol)
# Corrected Value As Given By 1964Ar21

^{208}Pb Levels

E(level)†	Jπ‡	$T_{1/2}$@	$\Gamma^2_{\gamma 0}/\Gamma$#	Comments
0	0^+			
4085.2 *2*	2^+	0.87 fs *7*	0.52 *4*	E(level): others:4085.5 *15* (2001RyZZ), 4085.2 *20* (1980Ch22). Jπ: from γ(θ) and polarization measurements (2003En07, 1974Sw05). $T_{1/2}$: for $\Gamma_{\gamma 0}/\Gamma$=0.9954 *15* from Adopted Gammas. $\Gamma^2_{\gamma 0}/\Gamma$: weighted average of 0.45 *3* (2003En07), 0.68 *9* (2001RyZZ), 0.49 *5* (1974Sw05) and 0.58 *3* from B(E2) In (e,e′) others: 0.68 *15* (1980Ch22), 0.51 *20* (1977Co10). $\Gamma_{\gamma 0}/\Gamma$>0.9 (1974Sw05). The value is At the 99% confidence level based on self-absorption measurements and a search for competing γ branches.
4507.2? *18*	1		0.79 *11*	E(level): Eγ=4507.1γ reported by 2001RyZZ and assigned to a 4507 level. This level is not seen In any other reaction.
4729.4? *13*	1		0.16 *5*	E(level): Eγ=4729.3γ reported by 2001RyZZ and assigned to a 4729 level. This level is not seen In any other reaction.
4842.0 *2*	1^-	0.068 fs *+21−15*	4.86 *24*	E(level): weighted average of 4841.7 *3* (2003En07) and 4842.2 *2* (1981Bi11). Other:4841.4 *12* (2001RyZZ). Jπ: from γ(θ) and polarization measurements (2003En07, 1994Oh06, 1982Wi06). $\Gamma^2_{\gamma 0}/\Gamma$: weighted average of 4.78 *31*

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^{208}Pb(γ,γ'),(pol γ,γ') (continued)

^{208}Pb Levels (continued)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[@]	$\Gamma^2_{\gamma 0}/\Gamma$[#]	Comments
				(2003En07), 5.01 *54* (2001RyZZ), 4.7 *9* (1982Wi06), 5.0 *8* (1980Ch22), and 5.1 *8* (1974Sw05). Other:6.9 *14* (1979La01). $\Gamma_{\gamma 0}/\Gamma$=0.85 *+13−9* (1980Ch22).
5292.3 *3*	1$^-$	0.049 fs *+28−18*	5.67 *21*	E(level): others: 5291.9 *13* (2001RyZZ), 5292.6 *20* (1980Ch22). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07, 1982Wi06). $\Gamma^2_{\gamma 0}/\Gamma$: weighted average of 6.31 *43* (2003En07), 5.58 *59* (2001RyZZ), and 5.1 *8* (1980Ch22) others: 5.2 *15* (1981Ac02), 7.0 *14* (1979La01), 7 *2* (1978Kn06), 8.6 *30* (1977Co10). $\Gamma_{\gamma 0}/\Gamma$=0.78 *+22−14* (1980Ch22).
5512.1 *3*	1$^-$	0.0194 fs *+12−18*	22.6 *10*	E(level): others: 5511.7 *15* (2001RyZZ), 5512.2 *10* (1980Ch22). The value of 1978Kn06, 5507.7 *18*, is discrepant. J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07, 1994Oh06, 1982Wi06, 1979Na01). $\Gamma^2_{\gamma 0}/\Gamma$: weighted average of 28.3 *21* (2003En07), 22.2 *23* (2001RyZZ), 17.7 *48* (1981Ac02), 22.3 *34* (1980Ch22), 21.4 *22* (1979La01). Others: 17.7 *48* (1981Ac02), 18 *3* (1978Kn06). $\Gamma_{\gamma 0}/\Gamma$=0.98 *+2−4* (1980Ch22).
5715.5 *4*	2$^+$	2.6 fs *+5−3*	0.14 *2*	E(level): other: 5714.3 *18* (2001RyZZ). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07). $T_{1/2}$: $\Gamma_{\gamma 0}/\Gamma$=0.888 *9* from Adopted Gammas. $\Gamma^2_{\gamma 0}/\Gamma$: from 2003En07. Other: 0.14 *3* (2001RyZZ).
5844.9 *4*	1$^+$	≤0.31 fs	1.61 *13*	E(level): others: 5844.5 *15* (2001RyZZ), 5846.1 *11* (1984Be31). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07, 1982Wi06). $\Gamma^2_{\gamma 0}/\Gamma$: weighted average of 1.67 *16* (2003En07), 1.50 *22* (2001RyZZ), and 1.2 *4* (1982Wi06).
5947.0 *4*	1$^-$	≤0.48 fs	1.06 *11*	E(level): others: 5946.6 *13* (2001RyZZ), 5948.0 *30* (1980Ch22). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07). $\Gamma^2_{\gamma 0}/\Gamma$: weighted average of 1.13 *11* (2003En07), 0.86 *20* (2001RyZZ), and 1.0 *3* (1980Ch22).
6193.1 *4*	2$^+$	≤0.95 fs	0.61 *13*	E(level): other: 6193.0 *16* (2001RyZZ). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07). $\Gamma^2_{\gamma 0}/\Gamma$: weighted average of 0.57 *7* (2003En07) and 0.99 *21* (2001RyZZ).
6255.6 *4*	2$^+$	≤0.91 fs	0.78 *28*	E(level): other: 6255.1 *21* (2001RyZZ). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07). $\Gamma^2_{\gamma 0}/\Gamma$: unweighted average of 0.50 *7* (2003En07) and 1.06 *15* (2001RyZZ).
6263.8 *4*	1$^-$	≤0.21 fs	2.7 *5*	E(level): others: 6263.1 *16* (2001RyZZ), 6263.4 *30* (1980Ch22). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07, 1982Wi06). $\Gamma^2_{\gamma 0}/\Gamma$: weighted average of 4.17 *54* (2003En07), 2.39 *28* (2001RyZZ), 3.0 *11* (1981Ac02), 2.6 *5* (1980Ch22), 4.1 *18* (1977Co10).
6313.9 *4*	1$^-$	≤0.17 fs	3.0 *3*	E(level): others: 6312.9 *12* (2001RyZZ), 6311.7 *30* (1980Ch22). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07,

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^{208}Pb(γ,γ'),(pol γ,γ') (continued)

^{208}Pb Levels (continued)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[@]	$\Gamma^2_{\gamma0}/\Gamma$[#]	Comments
				1982Wi06).
				$\Gamma^2_{\gamma0}/\Gamma$: weighted average of 3.34 *52* (2003En07), 2.67 *37* (2001RyZZ), 3.2 *6* (1980Ch22).
6361.6 *4*	1$^-$	≤0.30 fs	1.67 *17*	E(level): others: 6361.1 *26* (2001RyZZ), 6362.8 *30* (1980Ch22). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07, 1982Wi06). $\Gamma^2_{\gamma0}/\Gamma$: weighted average of 2.05 *37* (2003En07), 1.56 *22* (2001RyZZ), 1.6 *4* (1980Ch22).
6486.4 *5*	1$^-$	0.78 fs *+37−23*	0.29 *8*	J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07). $T_{1/2}$: $\Gamma_{\gamma0}/\Gamma$=0.71 *6* from Adopted Gammas. $\Gamma^2_{\gamma0}/\Gamma$: from 2003En07.
6505.6 *22*	1	≤1.0 fs	0.57 *13*	E(level): from 2001RyZZ. J$^\pi$: from $\gamma(\theta)$ (2001RyZZ).
6515.2 *18*	1	≤4.2 fs	0.20 *9*	E(level): from 2001RyZZ. J$^\pi$: from $\gamma(\theta)$ (2001RyZZ).
6719.7 *5*	1$^-$	0.052 fs *+6−12*	8.7 *8*	E(level): others: 6718.5 *19* (2001RyZZ), 6720.1 *15* (1980Ch22) 6721.1 *18* (1978Kn06). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (2003En07, 1982Wi06). $\Gamma^2_{\gamma0}/\Gamma$: weighted average of 9.9 *11* (2001RyZZ), 6.9 *20* (1981Ac02), 7.6 *15* (1980Ch22). Others: 13.0 *15* (1979La01), 13 *3* (1978Kn06), 13.0 *16* (1979La01), 13 *3* (1978Kn06), 15 *6* (1977Co10). As pointed out by 1980Ch22, these high values May include a contribution from a close-lying level In ^{206}Pb. $\Gamma_{\gamma0}/\Gamma$=1.00 *+0−11* (1980Ch22).
6913 *4*	2$^+$	≤0.85 fs	0.66 *12*	J$^\pi$: J=2 from $\gamma(\theta)$ (2001RyZZ). J$^\pi$=2$^-$ is ruled out since the measured value of $\Gamma_{\gamma0}/\Gamma$ would lead to B(M2)(W.u.)>82 for the 6913 g.s. transition.
6980 *40*		≈0.13 fs	≈0.26	E(level): from 1965Gi04. $\Gamma^2_{\gamma0}/\Gamma$: $\Gamma_{\gamma0}$=0.95 eV *10*, Γ≈3.5 eV, ε=10 eV *1* (1965Gi04). See also 1967Pr15.
7063.5 *2*	1$^-$	0.025 fs *+1−3*	17.8 *11*	E(level): from 1981Bi11. Others: 7062.1 *26* (2001RyZZ), 7063.3 *15* (1980Ch22). 1976Sp05 report 7064.4 *5*; however, this value should Be lowered by about 1 keV. See comment on the 7083 level. J$^\pi$: from $\gamma(\theta)$ and polarization measurements (1982Wi06, 1981Bi11, 1979Na01). $\Gamma^2_{\gamma0}/\Gamma$: weighted average of 17.3 *19* (2001RyZZ), 19.5 *17* and 17.4 *33* (1981Bi11), 16.9 *44* (1981Ac02), 15.7 *26* (1980Ch22). Others: 24 *3* (1978Kn06), 29 *3* (1977Ye01), 29 *10* (1977Co10), 18 *3* (1976Sp05), 31 *3* (1973Sw01). As pointed out by 1980Ch22, these high values May contain a contribution from a close-lying level In ^{206}Pb. $\Gamma_{\gamma0}/\Gamma$=0.98 *+2−7* (1980Ch22). others: 0.9 *+1−4* (1977Ye01). Γ_γ/Γ<0.1 for branching of gammas to any one level with J=1,2 or 3 (1973Sw01, 99% confidence level). $\Gamma_{\gamma0}/\Gamma$>0.7 based on nonobservation of branching gammas (1977Ye01).
7083.3 *3*	1$^-$	0.050 fs *4*	9.1 *7*	E(level): from 1981Bi11. Others: 7081.9 *25* (2001RyZZ), 7082.8 *15* (1980Ch22). 1976Sp05 report 7084.4 *5* based on calibration lines of 7632.2 *2* and 7646.6 *2* from ^{56}Fe(n,γ). Recent values for these transitions are Eγ=7631.2 *2*, 7645.6 *2* (1980Ve05) and 7631.3 *2*, 7645.7 *2* (1980Is02) so the authors′ value should Be lowered by about 1 keV, giving agreement with the adopted value.

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^{208}Pb(γ,γ'),(pol γ,γ') (continued)

^{208}Pb Levels (continued)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[@]	$\Gamma^2_{\gamma0}/\Gamma$[#]	Comments
				J$^\pi$: from $\gamma(\theta)$ and polarization measurements (1982Wi06,1981Bi11,1979Na01). $\Gamma^2_{\gamma0}/\Gamma$: weighted average of 9.4 *10* (2001RyZZ), 9.1 *13* (1981Bi11), 8.0 *23* (1981Ac02), 8.8 *15* (1980Ch22). Others: 15 *3* (1978Kn06), 16 *3* (1977Ye01), 14 *5* (1977Co10),≈9.8 (1974Sc08), 17 *2* (1973Sw01). As pointed out by 1980Ch22, these high values May include a contribution from a close-lying level In ^{206}Pb. $\Gamma_{\gamma0}/\Gamma$=1.0 (1980Ch22). The authors measured value is larger than unity by almost two standard deviations. They consider this to Be a statistical anomaly and set the g.s. branching to unity others: 0.8 *+2−3* (1977Ye01), 0.58 *+26−20* (1974Sc08). Γ_γ/Γ<0.1 for branching of gammas to any one level with J=1,2 or 3 (1973Sw01, 99% confidence level). $\Gamma_{\gamma0}/\Gamma$>0.7 based on nonobservation of branching gammas (1977Ye01).
7176 *4*	1	≤0.57 fs	1.02 *22*	
7208 *3*	1	≤0.51 fs	1.11 *21*	
7243 *3*		≤0.24 fs	2.2 *3*	E(level): other: 7243 *4* (1980Ch22). $\Gamma^2_{\gamma0}/\Gamma$: weighted average of 2.3 *3* (2001RyZZ), 1.7 *6* (1980Ch22).
7278? *4*		≤0.42 fs	1.7 *6*	E(level),$\Gamma^2_{\gamma0}/\Gamma$: from 1980Ch22. Based on their value of $\Gamma^2_{\gamma0}/\Gamma$, the authors suggest that this level is distinct from that At 7279 or At least that one or more levels In addition to the 7279 level are contributing to the observed strength.
7278.67 *20*	1$^+$	0.585 fs *15*	0.78 *2*	E(level): from E(recoil-corrected source Eγ)-E(level)=7.3 eV *1* (see table above) and Eγ(^{56}Fe(n,γ) source)=7278.82 *20* (1980Ve05) one gets E(level)= 7278.67 *20*. J$^\pi$: from $\gamma(\theta)$ and polarization measurements (1970Mo26). for sources for parameters of this level see table above.
7332.4 *10*	1$^-$	0.016 fs *+2−4*	29 *3*	E(level): weighted average of 7331.3 *30* (2001RyZZ), 7332.2 *15* (1980Ch22), 7332.7 *13* (1978Kn06). J$^\pi$: from $\gamma(\theta)$ and polarization measurements (1982Wi06, 1979Na01). $\Gamma^2_{\gamma0}/\Gamma$: weighted average of 29.3 *31* (2001RyZZ), 26.9 *48* (1980Ch22). Others: 27 *7* (1981Ac02), 45 *3* (1979La01), 42 *1* (1978Kn06), 38 *13* (1977Co10). $\Gamma_{\gamma0}/\Gamma$=1.00 *+0−12* (1980Ch22).
7415 *3*	1	≤0.17 fs	3.1 *4*	E(level),J$^\pi$: with S(n)=7367.87 *5* this level corresponds to E(res C.M.)=47 *3*, known to have J$^\pi$=1$^-$.
7547.5 *26*	1	≤0.35 fs	1.6 *3*	E(level),J$^\pi$: with S(n)=7367.87 *5* this level corresponds to E(res C.M.)=179.6 *26*, known to have J$^\pi$=1$^+$.
7631 *4*	1	≤0.57 fs	1.3 *5*	E(level),J$^\pi$: with S(n)=7367.87 *5* this level corresponds to E(res C.M.)=263 *4*, known to have J$^\pi$=1$^-$.
7685.3 *5*		≤0.42 as		E(level),J$^\pi$: from 1976Sm03. With S(n)=7367.87 *5* this corresponds to E(res C.M.) =317.4 *5*, known to have J$^\pi$=1$^-$. $\Gamma^2_{\gamma0}/\Gamma$: $\Gamma_{\gamma0}$=14 eV *+6−4*, Γ=1.1 keV *+5−3* (1976Sm03).
7722.6 *24*	1	≤0.62 fs	0.93 *19*	E(level),J$^\pi$: with S(n)=7367.87 *5* this level corresponds to E(res C.M.)=354.7 *24*. No resonance with J=1 is known At this energy.
7913 *3*	1	≤0.48 fs	1.20 *25*	E(level),J$^\pi$: with S(n)=7367.87 *5* this level corresponds to E(res C.M.)=545 *3*, known to have J$^\pi$=1$^-$.
10040				E(level): from 1982St03. dipole excitation dominant, but E2 contribution As high As 25% cannot Be ruled out ($\sigma(\theta)$ 1982St03). 1985Be18, from

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^{208}Pb(γ,γ'),(pol γ,γ') (continued)

^{208}Pb Levels (continued)

E(level)[†]	Comments
	$\sigma(\theta)$ for Eγ=10055, also conclude that dipole excitation is dominant. From their σ(scattering) and σ(absorption) from 1977Sh19 In (γ,n), 1985Be18 obtain $\Gamma\leq$25 keV.
10600	E(level): from 1982St03. dipole excitation dominant, but E2 contribution As high As 20% cannot Be excluded ($\sigma(\theta)$ 1982St03).
11270	E(level): from 1982St03. dipole excitation dominant, but E2 contribution As high As 15% cannot Be ruled out ($\sigma(\theta)$ 1982St03). 1985Be18, from $\sigma(\theta)$ for Eγ=11388, also conclude that dipole excitation is dominant. From their σ(scattering) and σ(absorption) from 1977Sh19 In (γ,n), 1985Be18 obtain $\Gamma\leq$70 keV.
11450	E(level): from data of 1982St03 As given by 1985Be18. dipole excitation dominant, but E2 contribution As high As 15% cannot Be ruled out ($\sigma(\theta)$ 1982St03). 1985Be18, from $\sigma(\theta)$ for Eγ=11388, also conclude that dipole excitation is dominant. From their σ(scattering) and σ(absorption) from 1977Sh19 In (γ,n), 1985Be18 obtain $\Gamma\leq$70 keV.
11.6×10^3 *1*	E(level): from 1988Sc16. Γ: 2.1 MeV. If E1, %EWSR=11 (1988Sc16).
13.5×10^3 *1*	E(level): from 1988Sc16. configuration: isovector giant dipole resonance. Γ=3.7 MeV. %EWSR=111 (1988Sc16).
20.2×10^3 *5*	E(level): from 1992Da09. Others: 1988Sc16 report E=22.5×10^3. configuration: isovector giant electric dipole resonance (1992Da09, 1988Sc16). Excitation is E2 from polarization asymmetries (1992Da09). Γ=5.5 MeV *5*, %EWSR=140 *30* (1992Da09). Others: 1988Sc16 report Γ=9.0 MeV and %EWSR=100.

[†] Except where noted otherwise, energies are from 2003En07 up to 6720, and from 2001RyZZ for higher levels. The uncertainties given for values of 2001RyZZ are from a private communication to the evaluator. All energies are based on observed ground-state transitions.

[‡] From $\gamma(\theta)$ measurements of 2001RyZZ, except where noted otherwise.

[#] Values given are $\Gamma^2_{\gamma 0}/\Gamma$ (In eV) for J As given. Values are from 2001RyZZ, except where noted otherwise, and include a systematics uncertainty of 10% (priv comm from author) added In quadrature to the statistical uncertainties given In 2001RyZZ.

[@] From $\Gamma^2_{\gamma 0}/\Gamma$ and $\Gamma_{\gamma 0}/\Gamma$ As given. Where $\Gamma_{\gamma 0}/\Gamma$ is not known, $T_{1/2}$ is given As an upper limit.