^{208}Pb(n,p),(^{7}Li,^{7}Be),(^{13}C,^{13}N)

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

All the data are summarized In 1999An13. See these authors for a discussion of the various resonances with a comparison with theory.

1986Er09: E(π^-)=165 MeV, FWHM ≈ 6 MeV
1987Gl05: E(^{7}Li)=78 MeV, FWHM=800 keV
1989Mo19: E(n)=198, 458 MeV, FWHM=1.5, 2.1 MeV
1993Be19: E(^{13}C)=650 MeV, FWHM=300, 600 keV
1995Lh02: E(^{13}C)=780 MeV, FWHM ≈ 500 keV
1996Ol01: E(n)=100 MeV,
1997Ra32: E(n)=198 MeV,
1997Ri05: E(n)=100 MeV,
1998Lo12: E(n)=298 MeV,
1999An13: E(^{7}Li)=350 MeV, FWHM ≈ 1500 keV

^{208}Tl Levels

E(level)	J^π	L	Comments
8×10^2 *3*	(1^-)		Γ=2400 keV *600* (1999An13) E(level): from 1999An13. Other:≈1300 (1987Gl05). Γ: from 1999An13. Other:≈3500 (1987Gl05). J^π: probable giant dipole resonance (1999An13).
2.7×10^3 *2*	(1^-)		Γ=4200 keV *600* (1999An13) E(level): from 1989Mo19. Other: 2700 *400* (1999An13). J^π: probable spin dipole resonance (1999An13).
≈4000			Γ≈4000 keV E(level): from 1997Ra32, 1998Lo12.
5.1×10^3 *2*	$(0)^-$	1	Γ=2800 keV *100* (1989Mo19) E(level): from 1989Mo19. Others:5100 *500* (1999An13),≈4500 (1997Ra32, 1998Lo12), 2000 to 20000 (1996Ol01, 1997Ri05). Γ: other: 3500 *700* (1999An13),≈3000 (1997Ra32, 1998Lo12). J^π: 1989Mo19 suggest identification As the spin isovector dipole resonance (sivdr). The excitation energy is close to that predicted by RPA calculations. $\sigma(\theta)$ is consistent with DWIA calculations for small momentum transfer, but is inconsistent At large transfer with either spin-dipole or spin-quadrupole shapes. Unresolved high-spin states could account for the deviation. The cross section ratio for the T+1 (p,n) and T-1 (n,p) reactions are consistent with sivdr. A multipole decomposition analysis by 1997Ra32 shows that this peak has components. L: from 1996Ol01, 1997Ra32, 1997Ri05, 1998Lo12.
≈5800	(2^+)		E(level): from 1995Lh02. J^π: giant quadrupole resonance predicted At≈7100 (1983Au01,1983Au03,1983Au07).
7.0×10^3 *28*	$(0)^+$	0	Γ=11600 keV *7100* (1986Er09) E(level): from 1986Er09. Others:≈9800 (1995Lh02),≈9500 (1997Ra32,1998Lo12). L: from 1997Ra32, 1998Lo12. Γ: other:≈5500 (1997Ra32,1998Lo12). J^π: probable giant monopole resonance.
8.3×10^3 *2*	$(2^+,3^+)$		Γ=4000 keV *800* (1999An13) E(level): from 1989Mo19. Other: 8000 *800* (1999An13). J^π: probable spin quadrupole resonance (1999An13).
13.6×10^3 *2*	$(1)^+$	0	Γ=9000 keV *600* (1989Mo19) E(level): from 1989Mo19. Other: 13.0×10^3 *13* (1999An13),≈14000 (1997Ra32, 1998Lo12). Γ: other:8200 *1500* (1999An13),≈12000 (1997Ra32, 1998Lo12). L: from 1997Ra32, 1998Lo12. J^π: 1989Mo19 suggest interpretation As spin isovector monopole resonance (sivmr). The excitation energy is consistent with RPA calculations, and the angular distribution is consistent with DWIA

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^{208}Pb(n,p),(^{7}Li,^{7}Be),(^{13}C,^{13}N) (continued)

^{208}Tl Levels (continued)

E(level)	L	Comments
		calculations for such a resonance; however, other possibilities, such As L=2, $J^{\pi}=1^{+}$ cannot Be unambiguously ruled out. In (π^{-},π^{0}), 1986Er09 report E=7000 *3000* with Γ=12000 *7000* for the sivmr.
16.5×10^{3} *20*		Γ=3100 keV *500* (1993Be19) E(level): from 1993Be19. Other:≈16500 (1995Lh02). Γ: other:≈3500 (1995Lh02). J^{π}: proposed by 1993Be19 As the spin isovector monopole resonance; however, 1995Lh02 show that $\sigma(\theta)$ is not consistent with DWBA calculations for L=0, but instead is fit reasonably well by L=2.
20.4×10^{3} *20*	1	Γ=8200 keV *1600* (1999An13) E(level): from 1999An13. Other:≈19000 (1997Ra32, 1998Lo12). J^{π}: possible spin dipole resonance (1997Ra32). Γ: other:≈15000 (1997Ra32, 1998Lo12). L: from 1997Ra32, 1998Lo12.