^{48}Ti(e,e′) 1990Gu09,1971He08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 179, 1 (2022)	30-Nov-2021

1990Gu09,1989Gu17: Two measurements: 1) E=25-70 MeV electron beams were produced from the Darmstadt electron linear accelerator and scattered electrons were detected with a double-focusing magnetic spectrometer; 2) E=70-209 MeV electrons from Amsterdam accelerator and scattered electrons were detected with a QDD magnetic spectrometer. Targets were self-supporting foils of 12 mg/cm^2 99.1% enriched ^{48}Ti. Measured $\sigma(\theta$=117°, 141°, 165°), FWHM=29 keV at E=25 MeV to 64 keV at 209 MeV. Deduced levels, J, π, transition strengths from model-independent and model-dependent PWBA analysis.

1971He08: E=198 and 299 MeV electron beams were produced from the Stanford Mark III electron accelerator. Measured $\sigma(\theta)$ with a double-focusing spectrograph and detected with a 100-channel plastic scintillator backed by 10 Cerenkov counters. Form factors compared with predictions of hydrodynamic liquid drop and phenomenological models. Deduced transition strengths.

Others: 1982WoZS, 1977HoYY, 1972Li12, 1968Fr11.

^{48}Ti Levels

Transition strengths given under comments are from model-independent analysis in 1990Gu09, unless otherwise noted. 1990Gu09 note that the model-independent analysis tends to overestimate the strengths for weak states and, therefore, for those cases values from the model-dependent analysis is preferred and given, as noted.

E(level)[†]	Jπ[‡]	Comments
0.0	0$^+$[#]	
984	2$^+$[#]	B(E2)↑=0.0537 *36* (1971He08) E(level): from 1971He08. B(E2)↑: other: 0.111 *7*, another value from fit in 1971He08. Static quadrupole moment Q_2=−0.177 eb *8* from electron scattering (1972Li12). 1972Li12 also report a value of −0.200 eb *37* determined from B(E2) ratios.
2416	2$^+$	B(E2)↑=0.0043 *6* B(E2)↑: weighted average of 0.0049 *9* (1971He08) and 0.0040 *6* (1990Gu09, model-dependent analysis).
2996	0$^+$	
3017	2$^+$	B(E2)↑=0.00112 *20*
3239	(3$^+$)	B(M3)↑=0.50 *10* Jπ: spin and parity and B(XL)↑ are preliminary (1990Gu09).
3374	2$^+$&3$^-$	B(E2)↑=0.0073 *10*; B(E3)↑=0.0080 *16* E(level),Jπ: 2$^+$ from model-independent analysis; but model-dependent analysis shows a transition of another multipolarity (E3) is also excited giving rise to a line in the spectrum in the vicinity of the 2$^+$ level. B(E2)↑: weighted average of 0.0076 *10* (model-independent analysis) and 0.0068 *12* (model-dependent analysis). B(E3)↑: from model-dependent analysis (1990Gu09).
3607	3$^+$	B(M3)↑=0.200 *25*
3616	2$^+$	B(E2)↑=0.00138 *18*
3704	1$^-$	B(E1)↑<2×10^{-5} (1989Gu17) Jπ: 3$^-$ from model-independent analysis; however, careful model-dependent analysis shows the state to be 1$^-$ excited by an octupole vibration. Such incorrect model-independent J^π assignments occur in the case of the very special transition mechanism discussed in 1989Gu17 and the other model-independent 3$^-$ states observed here require further study.
3742	1$^+$	B(M1)↑=0.52 *8* BM1=0.61 *6* from model-dependent analysis (1990Gu09).
3787	2$^-$	
3849?	(3$^+$)	B(M3)↑=0.40 *4* Jπ: spin and parity and B(XL)↑ are preliminary (1990Gu09).
3871	(3$^-$)[@]	
4102	1$^+$	B(M1)↑=0.17 *7*
4209	2$^-$	

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^{48}Ti(e,e′) 1990Gu09,1971He08 (continued)

^{48}Ti Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	Comments
4263	1^+	B(M1)↑=0.14 *10*
4596	(3^-)[@]	
4918	2^+	B(E2)↑=0.00138 *21*
4997	0^+	
5241	1^+	B(M1)↑=0.11 *3*
5317	2^+	B(E2)↑=0.00164 *28*
5562	(3^-)[@]	
5571	2^+	B(E2)↑=0.00093 *20*
5633	2^+	B(E2)↑=0.0019 *5*
5640	$1^+,2^+$	B(M1)↑=0.47 *8*; B(E2)↑=0.00119 *18* E(level),J$^{\pi}$: could be 5633+5657 in model-independent analysis.
5657	1^+	B(M1)↑=0.25 *4* BM1=0.33 *4* from model-dependent analysis.
5764	2^+	B(E2)↑=0.00031 *10*
5835	(3^-)[@]	
5884	(3^-)[@]	
5940	2^+	B(E2)↑=0.00038 *12*
5988	$1^+,3^+$	B(M1)↑=0.08 *3*; B(M3)↑=0.236 *59*
6011	$2^+,3^+$	B(E2)↑=0.00051 *12*; B(M3)↑=0.196 *33*
6029	(3^-)[@]	
6061	$1^+,3^+$	B(M1)↑=0.10 *3*; B(M3)↑=0.152 *40*
6077	(3^-)[@]	
6122	0^+	
6203	2^-	
6248	3^-	B(E3)↑=0.00349 *35* E(level),J$^{\pi}$: other: 6241, 2^- from model-independent analysis (1990Gu09).
6267	(3^-)[@]	
6424	3^-	B(E3)↑=0.0056 *29*
6648	3^+	B(M3)↑=0.157 *41*
6710	$1^+,3^+$	B(M1)↑=0.21 *7*; B(M3)↑=0.206 *41*
6755	3^+	B(M3)↑=0.327 *69*
7070	$1^+,3^+$	B(M1)↑=0.18 *7*; B(M3)↑=0.186 *99*
7220	1^+	B(M1)↑=1.01 *6*
7296	3^+	B(M3)↑=0.410 *157*
7346	2^+	B(E2)↑=0.00085 *19*
7826	$1^+,3^+$	B(M1)↑=0.09 *4*; B(M3)↑=0.038 *11*
7872	3^+	B(M3)↑=0.300 *84*
7911	1^+	B(M1)↑=0.08 *3*
8059	$1^+,3^+$	B(M1)↑=0.09 *3*; B(M3)↑=0.084 *19*
8197	$1^+,3^+$	B(M1)↑=0.24 *9*; B(M3)↑=0.103 *23*

[†] From 1990Gu09, unless otherwise noted. For values quoted from 1971He08, an additional 6% uncertainty in the normalization as noted in 1971He08 is not included and has been added by the evaluator.

[‡] Spin and parities and B(XL)↑ are extracted from a model-independent analysis of measured $\sigma(\theta)$ (1990Gu09), unless otherwise noted.

[#] From Adopted Levels.

[@] Parentheses added by evaluator. These 3^- assignments are extracted from model-independent analysis but considered questionable. See the comment on J^{π}(3704).