^{48}Ti(d,p),(d,pγ),(pol d,p)

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows[a]	NDS 109, 1879 (2008)	14-Jul-2008

1981Ma08: E=6 MeV. Measured P′s, γ′s, and pγ′s; Si.
1987Ta03: E=6 MeV. Measured pγ-coincidences; Si. DSAM.
Others: see 1995Bu23. See 1980Ma32 for a study of deuteron breakup At 52 MeV.

^{49}Ti Levels

1967Ba32 and 1972Ba18 measured σ(θ) and used DWBA analysis, As did 1972Ko41.
1967Ba32: E=6 MeV. θ(C.M.)≈20°−170°. See 1968Wi02 for revised S-factors based on a different deuteron potential.
1972Ba18: E=10 MeV (some forward angle data taken At 8 MeV). FWHM≈12 keV. θ(C.M.)≈10°−170°.
1972Ko41: E=10 MeV. Measured σ(θ) and vector-analyzing power (VAP); Si′s. FWHM=35-70 keV (most data) or 110-150 keV. θ(C.M.)≈15°−85°.
Note that the comparison between the precise (n,γ) data of 1983Ru08 and the energies of 1967Ba32 is so good that 1983Ru08 suggest that 1967Ba32 overestimated the uncertainties and that a factor of 4 reduction seems appropriate. There is also good agreement between 1967Ba32 and 1981Ma08 even if this reduction factor is used.
L(F),S(γ) from 1967Ba32 with S′ As revised In 1968Wi02.

E(level)[†]	Jπ[‡]	$T_{1/2}$	L[#]	S′[#]	Comments
0.0	7/2−		3	1.89	
1381.8 *3*	3/2−	<3.5[@] ps	1	2.47	
1544 *8*				WEAK	
1585.1 *20*	3/2−	<7.6[@] ps	1	0.06	
1625 *8*				WEAK	
1723.3 *5*	1/2−		1	0.65	
1762	5/2−[&]	<9.7[@] ps		WEAK	
2258.0 *20*			(3)	(0.15)	Jπ,L: L=3 from σ(θ) but VAP not consistent with strong 5/2− or 7/2− transitions (1972Ko41). 1972Ko41 suggest that σ(θ) is non-stripping.
2471.4 *12*	7/2−[&]		3	0.45	
2503 *8*			0	0.04	
2517 *8*	5/2−[a]		3	0.89	possible doublet. See the Adopted Levels. This May explain the relatively poor agreement for this state with (n,γ) data of 1983Ru08.
2665 *8*	(3/2+)[&]		(2)	(0.05)	L: 1972Ko41 suggest that σ(θ) is non-stripping.
3042 *8*				WEAK	
3175.8 *7*	1/2−	76[b] fs *+33−25*	1	0.34	
3259.5 *5*	3/2−	<10[b] fs	1	0.73	
3425.6 *19*	3/2−[a]		1(+3)	0.05(+0.24)	suggestion of a doublet (1972Ba18) based on comparison of (d,p) and (t,p) data does not appear to Be confirmed In any other measurement.
3469 *8*	(3/2−)[a]		1	0.05	
3517 *12*				WEAK	
3610 *12*				WEAK	
3639 *12*				WEAK	
3699 *12*				WEAK	
3749 *12*				WEAK	see discussion In Adopted Levels.
3786.9 *8*	3/2−[a]	<16[b] fs	1	0.26	
3844 *12*	5/2−[a]		3	0.42	
4075 *12*				WEAK	
4143 *12*			(3)	(0.34)	Jπ,L: L=3 from σ(θ) but VAP not consistent with

Continued on next page (footnotes at end of table)

^{48}Ti(d,p),(d,pγ),(pol d,p) (continued)

^{49}Ti Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	L[#]	S′[#]	Comments
					strong 5/2⁻ or 7/2⁻ transitions (1972Ko41). 1972Ko41 suggest that σ(θ) is non-stripping.
4195 *12*					
4221.1 *16*	1/2⁻	<22[b] fs	1	0.13	
4360 *12*					
4433.0 *10*	3/2⁻		1	0.14	
4456 *12*			0	0.006	
4507.1 *27*	5/2⁺		2	0.36	
4589.8 *13*			1	0.08	
4669.2 *12*	1/2⁻		1	0.19	
4770 *12*	9/2⁺		4	3.16	Jπ,L: discrepant with L(^{3}He,α). See discussion In Adopted Levels.
4836 *12*				WEAK	
4897 *12*			2	0.29	
4909.8 *13*					
5063 *12*				WEAK	
5115.8 *11*	1/2⁻	<10[b] fs	1	0.66	
5173 *12*			3	0.48	
5232?[c] *15*			1	0.03	
5254.5 *25*			0	0.017	
5325.8 *13*			2	0.08	
5375 *12*				WEAK	
5411.7 *11*		19[b] fs *+12−10*	0	0.053	
5437 *12*			1	0.05	
5579 *12*					
5655 *12*			(1)	(0.01)	
5693 *12*			2	0.05	
5737.9 *12*			1	0.10	
5774?[c] *15*			0	0.005	
5786?[c] *15*			(1)	0.02	
5861?[c] *15*					
5931 *12*			0	0.016	
5965 *12*	5/2⁻[&]		3	0.10	
6010 *12*	5/2⁻[&]		3	0.14	
6078 *12*			0	0.025	
6091?[c] *15*					
6145 *12*					
6168 *12*					

[†] From 1967Ba32 (ΔE(level)≥3) and particle singles data of 1981Ma08 (ΔE(level)<3). Values for the 1381, 1723, 3175, 3259, and 4221 are from 1969Fe08 In (n,γ) and were used by 1981Ma08 As calibration points.

[‡] From comparison of VAP to DWBA (1972Ko41), except As noted.

[#] From 1972Ba18, except As noted. S-factors derived by 1972Ko41 agree within≈50%. See 1978Ha15 for comparison and 1972Ko41 for discussion.

[@] From 1976Wh01 (E=4 MeV; 1381,1585,1762γ(t)). See (p,p′γ) and Coulomb excitation for results from 1981Ma08 which are consistent with these data.

[&] From 1972Ba18 based on (t,p) and (d,p) angular momentum transfer and empirical J-dependence of L(d,p)=1 and L(d,p)=3. See (t,p), above, for details.

[a] Unresolved by 1972Ko41. Jπ obtained by comparison of σ(θ) and VAP to DWBA using empirical curves.

[b] From DSAM (1987Ta03).

[c] Reported by 1972Ba18 but not by 1967Ba32 or 1981Ma08.

^{48}Ti(d,p),(d,pγ),(pol d,p) (continued)

$\gamma(^{49}Ti)$

All data are from 1981Ma08. Coincidences shown on the drawing are from pγ set on protons feeding the 3176, 3787, 4507, and 5116 states.
No evidence for 361γ and 1650γ reported by 1969Fe08. See (p,p′γ), below, for additional gammas from states below≈3.8 MeV.

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π
1381.8	3/2$^-$	1382		0.0	7/2$^-$	4221.1	1/2$^-$	2839		1381.8	3/2$^-$
1585.1	3/2$^-$	1586[@]	100[@]	0.0	7/2$^-$	4433.0	3/2$^-$	2847	30	1585.1	3/2$^-$
1762	5/2$^-$	1762		0.0	7/2$^-$			3051	70	1381.8	3/2$^-$
2503		1122[‡&]		1381.8	3/2$^-$	4507.1	5/2$^+$	3125		1381.8	3/2$^-$
3175.8	1/2$^-$	1589[@]	<30[@]	1585.1	3/2$^-$	4669.2	1/2$^-$	2946		1723.3	1/2$^-$
		1794	>70	1381.8	3/2$^-$			3083[&]		1585.1	3/2$^-$
3259.5	3/2$^-$	1497		1762	5/2$^-$	5115.8	1/2$^-$	2612[‡&]		2503	
		1673[&]		1585.1	3/2$^-$			3530[#&]		1585.1	3/2$^-$
3786.9	3/2$^-$	2025[&]		1762	5/2$^-$			3734		1381.8	3/2$^-$
		2201		1585.1	3/2$^-$						

[†] Photon branching In percent from each level based on $\gamma\gamma$ and uncorrected for $\gamma\gamma(\theta)$ effects.
[‡] Suggested on the basis of the strength of the 1382γ In pγ for the population of the 5116 state.
[#] Suggested on the basis of a 1582γ In pγ.
[@] Multiply placed with undivided intensity.
[&] Placement of transition in the level scheme is uncertain.

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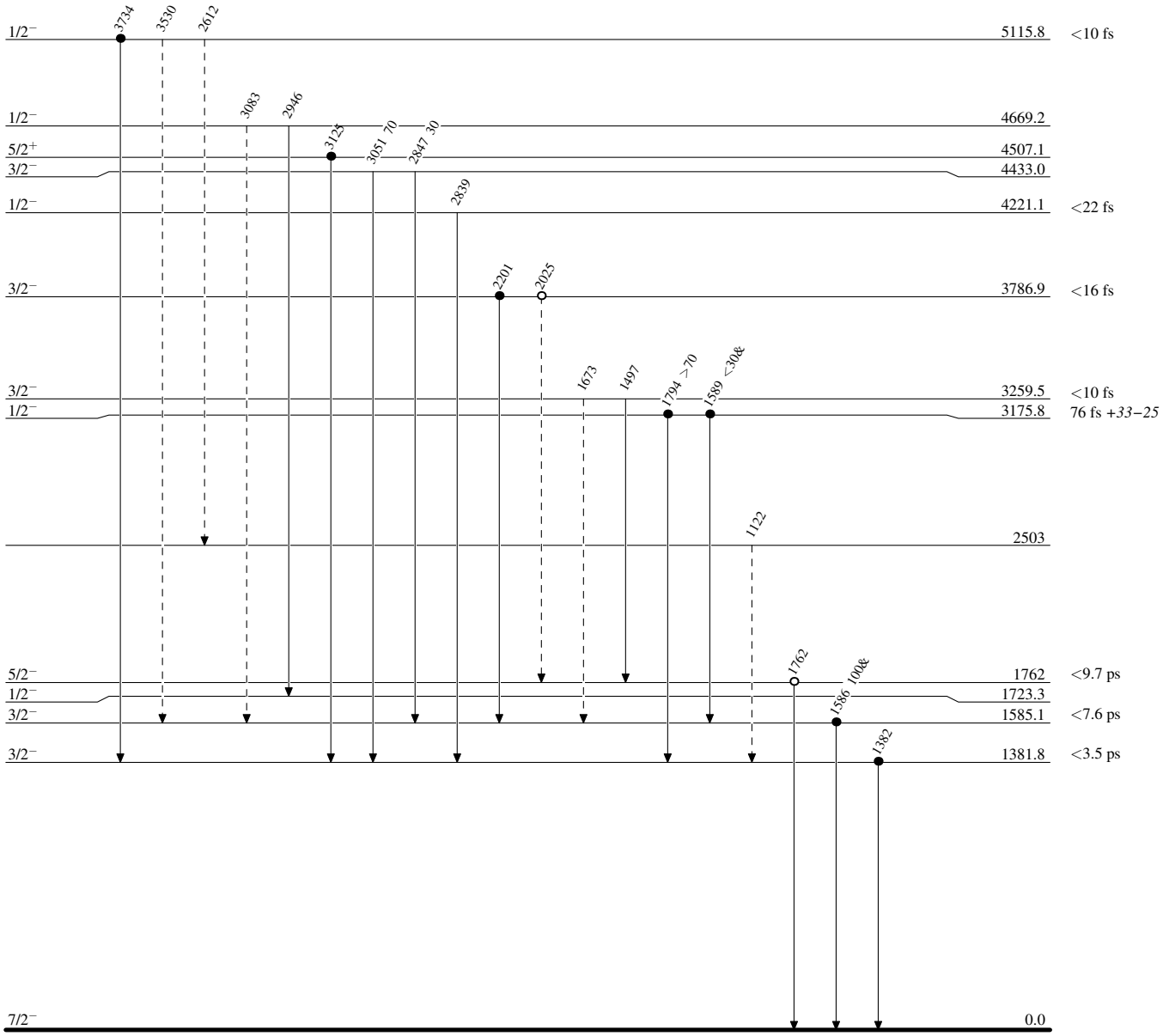
Legend

Level Scheme

Intensities: % photon branching from each level based on γγ and uncorrected for γγ(θ) effects γγ(θ) effects
& Multiply placed: undivided intensity given

- γ Decay (Uncertain)
- ● Coincidence
- ○ Coincidence (Uncertain)



$^{49}_{22}Ti_{27}$