$^{184}W(\gamma,\gamma')$ 1993He15,1970MoZJ,1970MoZK

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111,275 (2010)	1-Oct-2009

1970MoZJ, 1970MoZK: γ source is (n,γ) on titanium.

1981Sc10: Eγ=2-8 MeV; monochromatic photons from Ti(n,γ) source; measured σ, Eγ, branching (2 levels), $W(\theta)g\Gamma^2_{\gamma0}/\Gamma$.

1993He15: bremsstrahlung, 3.2, 3.8 MeV end point energies; 96.5% ^{184}W target; three HPGe detectors At θ=90°, 127°, 150°;measured Eγ, Iγ, beam-γ(θ), absolute scattering cross sections; used branching and Alaga rules to distinguish between K=0 and K=1 for many levels.

^{184}W Levels

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	$\Gamma^2_{\gamma0}/\Gamma$ (meV)[@]	Comments
0.0	0^+			J^{π}: from Adopted Levels.
111.2				E(level): rounded value from Adopted Levels.
1121.4				E(level): rounded value from Adopted Levels.
1996 *1*	1		1.87 *24*	
2056 *1*		26 fs *5*	3.30 *26*	K=(0) based on branching (1993He15).
2098 *1*		31 fs *4*	2.14 *23*	
2458 *1*	1	62 fs *12*	2.8 *3*	K=1 based on branching (1993He15).
2546 *1*	1	65 fs *15*	3.4 *6*	K=1 based on branching (1993He15).
2693 *1*	1		3.4 *6*	
2763 *1*	1		4.0 *5*	
2813 *1*			2.7 *6*	
2890 *1*	1	31 fs *6*	8.0 *6*	K=1 based on branching (1993He15).
2950 *1*	1	33 fs *6*	5.7 *5*	K=1 based on branching (1993He15).
3071 *1*	1		7.5 *9*	
3084 *1*	1		6.5 *9*	
3088 *1*	1		6.5 *9*	
3124 *1*	1		6.3 *9*	
3133 *1*	1		12.3 *6*	
3421 *1*		19 fs *12*	5.6 *25*	
3464 *1*	1	5.0 fs *12*	17.0 *27*	
3507 *1*	(1)	12 fs *4*	12.9 *25*	K=(1) based on branching (1993He15).
3571 *1*	(1)	4.1 fs *17*	14 *4*	K=(0) based on branching (1993He15).
3633 *1*	1	4.7 fs *17*	46 *15*	K=1 based on branching (1993He15).
3682 *1*	(1)	8 fs *5*	26 *14*	K=(1) based on branching (1993He15).
6555				$W(\theta)g\Gamma^2_{\gamma0}/\Gamma$=1.75 meV, Γ_0=2.9 meV (1981Sc10).
6759	1^+			J^{π}: from mult(6760γ)=M1. $W(\theta)g\Gamma^2_{\gamma0}/\Gamma$=3.44 meV, Γ_0=0.13 meV (1981Sc10).

† From Eγ for g.s. transition, except as noted.

‡ From 1993He15, based on measured beam-γ(θ), except As noted.

Deduced from measured $\Gamma^2_{\gamma0}/\Gamma$ and adopted $\Gamma_{\gamma1}/\Gamma_{\gamma0}$, assuming $\Gamma=\Gamma_{\gamma1}+\Gamma_{\gamma0}$, except As noted. thus, deduced $T_{1/2}$ will

Be an upper limit if branches exist to levels other than the g.s. and the 111-keV level.

@ $\Gamma^2_{\gamma0}/\Gamma$ (meV) calculated by evaluator from integrated cross section data of 1993He15 assuming J=1, unless noted otherwise.

$\gamma(^{184}W)$

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[@]	E_f	J^{π}_f	Mult.[‡]
111.2		111	100	0.0	0^+	
1996	1	1996 *1*	100	0.0	0^+	D
2056		1945	132 *20*	111.2		
		2056 *1*	100	0.0	0^+	

^{184}W(γ,γ')   **1993He15,1970MoZJ,1970MoZK (continued)**

$\gamma(^{184}$W) (continued)

E_i(level)	J_i^π	E_γ†	I_γ@	E_f	J_f^π	Mult.‡	E_i(level)	J_i^π	E_γ†	I_γ@	E_f	J_f^π	Mult.‡
2098		1987	85 *30*	111.2			3421		3310	110 *50*	111.2		
		2098 *1*	100	0.0	0+				3421 *1*	100	0.0	0+	
2458	1	2347	61 *12*	111.2			3464	1	3353	132 *22*	111.2		
		2458 *1*	100	0.0	0+	D			3464 *1*	100	0.0	0+	D
2546	1	2435	44 *11*	111.2			3507	(1)	3396	70 *20*	111.2		
		2546 *1*	100	0.0	0+	D			3507 *1*	100	0.0	0+	(D)
2693	1	2693 *1*	100	0.0	0+	D	3571	(1)	3460	180 *40*	111.2		
2763	1	2763 *1*	100	0.0	0+	D			3571 *1*	100	0.0	0+	(D)
2813		2813 *1*	100	0.0	0+		3633	1	3522	45 *12*	111.2		
2890	1	2779	35 *12*	111.2					3633 *1*	100	0.0	0+	D
		2890 *1*	100	0.0	0+	D	3682	(1)	3571	46 *14*	111.2		
2950	1	2839	56 *11*	111.2					3682 *1*	100	0.0	0+	(D)
		2950 *1*	100	0.0	0+	D	6555		5433&	28& *17*	1121.4		
3071	1	3071 *1*	100	0.0	0+	D			6444&	64& *32*	111.2		
3084	1	3084 *1*	100	0.0	0+	D			6555&	100&	0.0	0+	
3088	1	3088 *1*	100	0.0	0+	D	6759	1+	6648&	71& *25*	111.2		
3124	1	3124 *1*	100	0.0	0+	D			6759&	100&	0.0	0+	M1#
3133	1	3133 *1*	100	0.0	0+	D							

† From 1993He15 if ΔE_γ is stated; values with no stated uncertainties are from level energy differences, unless noted otherwise.

‡ From beam-$\gamma(\theta)$ (1993He15).

From $\gamma(\theta)$ and linear polarization (1970MoZJ,1970MoZK).

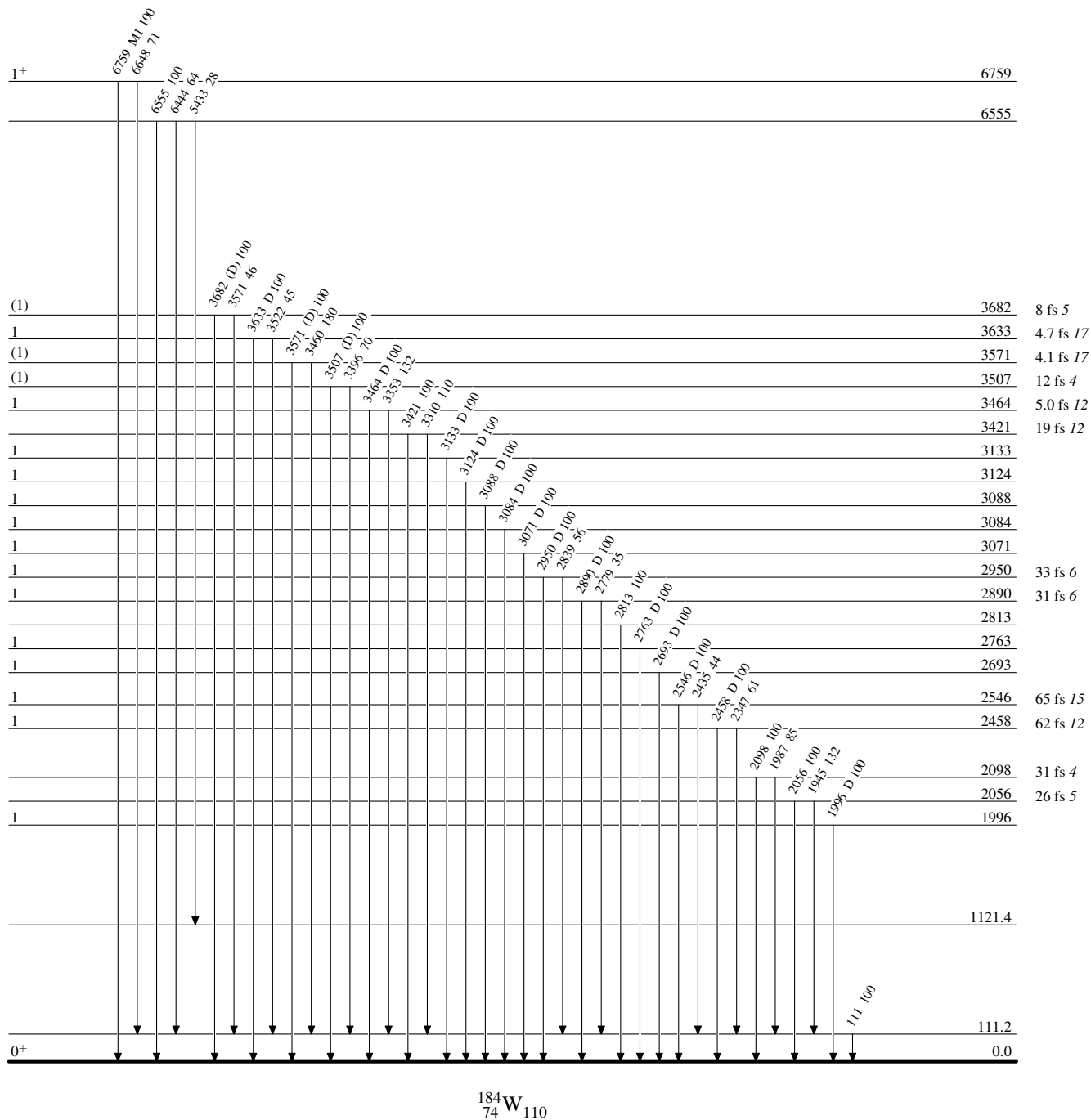@ Relative photon branching based on measured $\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$ (1993He15).

& From 1981Sc10.

^{x} γ ray not placed in level scheme.

^{184}W(γ,γ') **1993He15,1970MoZJ,1970MoZK**

Level Scheme

Intensities: Relative photon branching from each level

6759 M1 100
6648 71
6555 100
6444 64
5433 28

3682 (D) 100
3571 46
3633 D 100
3522 45
3571 (D) 100
3460 180
3507 (D) 100
3396 70
3464 D 100
3353 132
3421 100
3310 110
3133 D 100
3124 D 100
3088 D 100
3084 D 100
3071 D 100
2950 D 100
2839 56
2890 D 100
2779 35
2813 100
2763 D 100
2693 D 100
2546 D 100
2435 44
2458 D 100
2347 61
2098 100
1987 85
2056 100
1945 132
1996 D 100
111 100

J^π	Level	Half-life
1+	6759	
	6555	
(1)	3682	8 fs 5
1	3633	4.7 fs 17
(1)	3571	4.1 fs 17
(1)	3507	12 fs 4
1	3464	5.0 fs 12
	3421	19 fs 12
1	3133	
1	3124	
1	3088	
1	3084	
1	3071	
1	2950	33 fs 6
1	2890	31 fs 6
	2813	
1	2763	
1	2693	
1	2546	65 fs 15
1	2458	62 fs 12
	2098	31 fs 4
	2056	26 fs 5
1	1996	
	1121.4	
	111.2	
0+	0.0	

$^{184}_{74}$W$_{110}$