^{6}Li(α,γ) 1988Aj01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, C. G. Sheu and J. L. Godwin, et al.	NP A745 155 (2004)	31-Mar-2004

1966Fo05: ^{6}Li(α,γ) E=1-3 MeV, measured σ(E,E_{γ}), E_{γ}. ^{10}B deduced levels, J, π, γ-width, mixing ratios.
1975Au02: ^{6}Li(α,γ) E=3.75-5.2 MeV, measured σ(E,E_{γ}, θ=0 degree). ^{10}B deduced levels Γ-level, J, π, T.
1979Ke08: ^{6}Li(α,γ) E=1.02-1.18 MeV, measured E_{γ}, I_{γ}(THETA), Doppler shift attenuation. ^{10}B levels deduced γ-ray branching ratios, δ(E2/M1), $T_{1/2}$.
1979Sp01: ^{6}Li(α,γ) E=1140-1250 keV, measured σ(E). ^{10}B 5166 keV level deduced reosnance strength.
1984Na07: ^{6}Li(α,γ) E=1.03-1.2 MeV, measured thick target yields. ^{10}B deduced level parity mixing parameter, 2^{+}, T=1 level $\Gamma\alpha$.
1985Ne05: ^{6}Li(α,γ) E=resonance, measured γ thick target yield. Deduced P-shell collective effects. ^{10}B levels deduced resonance strength ratio, B(E2).
1986Ce05: ^{6}Li(α,γ) E≲3.7 MeV, analyzed reaction σ, other parameters.
1987Mu13: ^{6}Li(α,γ) E=1276 keV, measured reaction σ. Deduced target polarization dependence.
1989Ba24: ^{6}Li(α,γ) E=1.085,1.175 MeV, measured $\sigma(\theta)$. ^{10}B levels deduced γ-transition strengths, mixing ratios.
1997No04: ^{6}Li(α,γ) E≲2 MeV, analyzed reaction rates. Deduced primordial ^{6}Li component production related features.

^{10}B Levels

E(level)	J^{π}	$T_{1/2}$	Comments
0			
0.72×10^{3}			
1.74×10^{3}		4.9 fs *21*	Γ: from T_{mean}=7 fs *3* (1979Ke08).
2.15×10^{3}		1.3 ps *2*	Γ: from T_{mean}=1.9 fs *3* (1979Ke08).
3.59×10^{3}		104 fs *21*	Γ: from T_{mean}=150 fs *30* (1979Ke08).
4760 *15*	3^{+}	7.8 eV *12*	T=0 E(level): from E_{res}=500 keV *25* from (1953Wi32,1966La04). $\Gamma_{\gamma}/\Gamma=2.3\times10^{-3}$ *3* (1966Al06, 1985Ne05), $\Gamma\alpha=\Gamma$=7.8 eV *12* from (1981He05). In (1988Aj01) the value $\Gamma\alpha$=8.4 eV *18* is given with a reference to (private communication E.K. Warburton and D.E. Alburger); No supporting information has been published.
5112	2^{-}	0.978 keV *66*	T=0; $\Gamma\alpha/\Gamma$≈1.00 Γ: $\Gamma\alpha$: from (1984Na07). J^{π}, branching ratios and ω-γ from (1966Fo05).
5166	2^{+}	1.79 eV *40*	T=1; Γ_{γ}/Γ=0.83; $\Gamma\alpha$=0.29 eV *3* branching ratios from (1979Ke08) also see (1966Fo05). $\Gamma\alpha/\Gamma$=0.16 *4* from weighted average of $\Gamma\alpha/\Gamma$= 0.13 *4* (1966Al06) and $\Gamma\alpha/\Gamma$=0.27 *15* (1966Se03); this gives $\Gamma\alpha$=0.29 eV *3*, Γ_{γ}=1.50 eV *40* and Γ=1.79 eV *40*. Note: values given In Table 10.8 of (1988Aj01) are inconsistent. using only the more precise value, $\Gamma\alpha/\Gamma$= 0.13 *4*, gives $\Gamma\alpha$=0.28 eV *3*, Γ_{γ}=1.85 eV *60* and Γ=2.13 eV *60*. also see (1966Fo05) where private communication from Alburger giving Γ_{γ}/Γ=0.87 *4* is reported. ω-γ=0.40 eV *4* (1979Sp01).
5186 *21*	1^{+}	200 keV *30*	T=0 E(level): from E_{res}=1210 keV *35* (1961Sp02). Γ and Γ_{γ} from (1961Sp02).
5922	2^{+}	6.0 keV *10*	Γ: branching ratios from (1966Fo05).
6024	4^{+}	48 eV *30*	branching ratios from (1966Fo05).
6873 *5*	1^{-}	120 keV *6*	T=0+1; $\Gamma\alpha/\Gamma_{p}$=1.25 *12* (1975Au02) $\Gamma\alpha/\Gamma$=0.33 *2*; Γ_{γ}= 1.44 eV *34* E(level): from ^{9}Be(p,γ) (1975Au02,1979Aj01). Γ: $\Gamma\alpha/\Gamma$ from (1997Za06); Γ_{γ} from ω-γ and $\Gamma\alpha/\Gamma$.
7440? *20*	$2^{(-)}$	90 keV *9*	T=0+1 branching ratios from (1975Au02). level is uncertain; see discussion In Table 10.22 of (2004Ti06).

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γ(^{10}B)

E_i(level)	J^{π}_i	E_γ	I_γ	E_f	ω-γ (eV)	Comments
4760	3^+	4041	>99	0.72×10^3	4.1×10^{-2} *4*	B(E2)(↓)=21 e^2fm^4 2 (1985Ne05). Also see (1966Al06) where Γ_γ=0.020 eV *4* yields B(E2)=23 *5*, when c.m. Systematics are accounted for properly.
		4759	0.5 *1*	0		Γ_γ=0.018 eV *2*
5112	2^-	3370	5 *5*	1.74×10^3	0.005 *5*	
		4391	31 *7*	0.72×10^3	0.028 *8*	
		5109	64 *7*	0	0.059 *12*	
5166	2^+	1577	7.7 *3*	3.59×10^3	0.031 *4*	Γ_γ=0.114 eV *15*
		3009	64.8 *9*	2.15×10^3	0.259 *24*	Γ_γ=0.942 eV *90*
		3423	0.7 *2*	1.74×10^3	2.8×10^{-3} *8*	Γ_γ=0.010 eV *3*
		4444	22.4 *6*	0.72×10^3	0.090 *8*	Γ_γ=0.33 eV *3*
		5162	4.4 *4*	0	0.018 *2*	Γ_γ=0.068 eV *7*
5186	1^+	3445	≈100	1.74×10^3		Γ_γ=0.06 eV *3*
5922	2^+	4179	<1	1.74×10^3	<0.02	Γ_γ<0.02 eV
		5200	18 *5*	0.72×10^3	0.04 *1*	Γ_γ=0.02 eV *1*
		5918	82 *5*	0	0.19 *4*	Γ_γ=0.13 eV *3*
6024	4^+	5305	<3	0.72×10^3	<0.02	Γ_γ=0.11 eV *2*
		6023	>97	0	0.34 *5*	
6873	1^-	4718	14 *4*	2.15×10^3		
		5131	59 *3*	1.74×10^3		
		6153	21 *4*	0.72×10^3		
		6870	6 *2*	0		
7440?	$2^{(-)}$	6719	50 *12*	0.72×10^3		
		7437	50 *12*	0		

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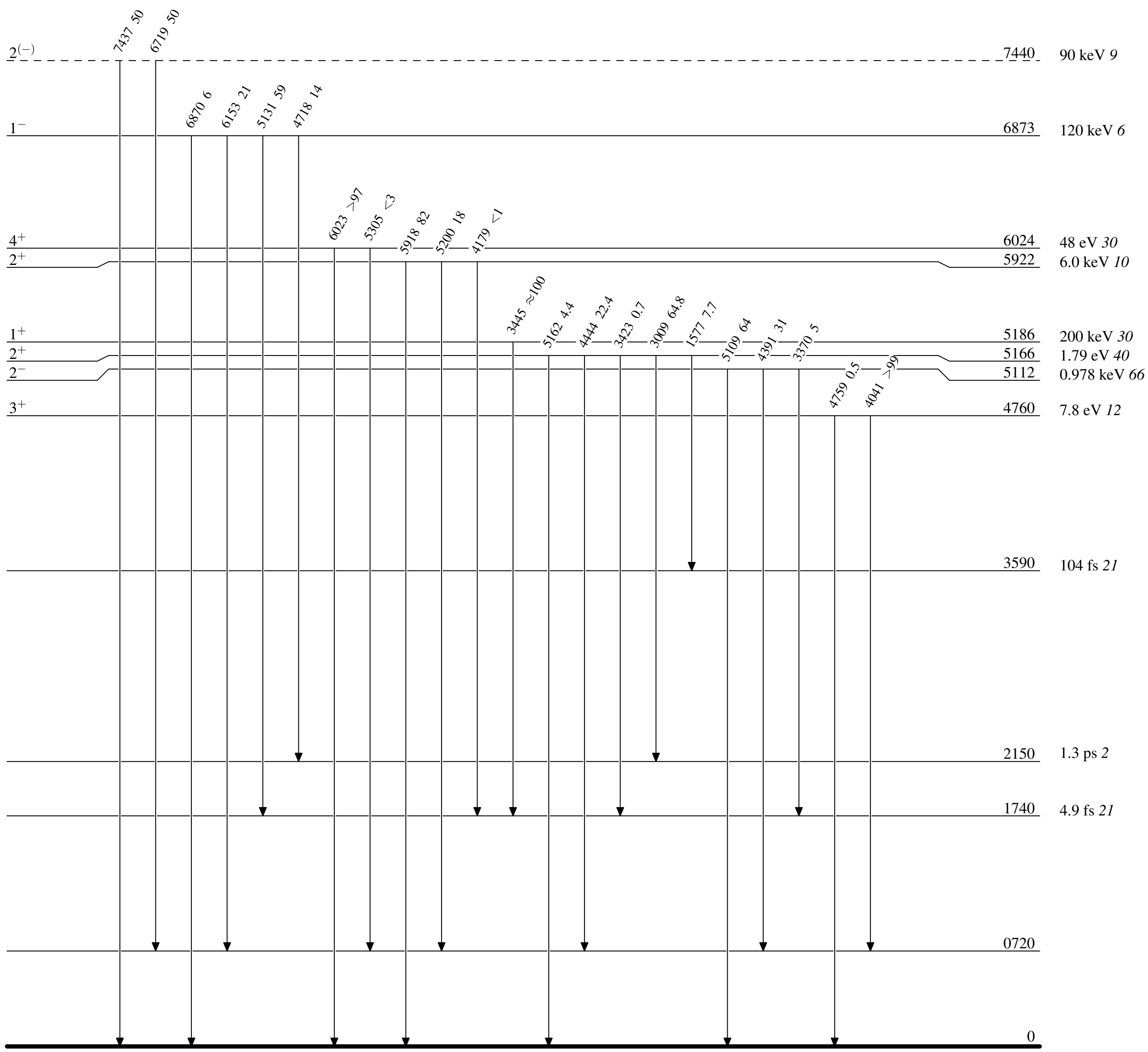
Level Scheme

Intensities: % photon branching from each level



$^{10}_{5}B_{5}$