^{19}F(α,pγ) 1993Ol05,1976Br06,1976Fi02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 127, 69(2015)	1-Apr-2015

1976Br06: ^{19}F(α,pγ), E=20.0 MeV measured σ(E,Ep,Eγ,θ).
1976Fi02: ^{19}F(α,pγ), E=12.0,15.0,18.5,19.0 MeV. Measured p$\gamma(\theta)$, DSA.
1993Ol05: ^{19}F(α,pγ), E=12 MeV, measured γp.
Other references: 1970Br28,1974Fi16,1975Me19,1976Sc20,1977To01, 1977Va10,1984Ba10,1986Ad11,1984Bh03,1968Ku05.

^{22}Ne Levels

E(level)†	J$^\pi$#	T$_{1/2}$†	Comments
0.0	0$^+$		
1274.61	2$^+$	3.67 ps *9*	T$_{1/2}$: Weighted average of 6 ps *2* (1966Li07), 4.1 ps *4* (1972Sz05), 3.2 ps *4* (1969Jo10), 4.1 ps *8* (1972Sn01), 3.7 ps *3* (1973An01), 3.4 ps *5* (1977Og03), 3.90 ps *14* (1977Ra01), 3.58 ps *9* (1984Bh03).
3358.7 *3*	4$^+$	236 fs *28*	T$_{1/2}$: Other values: 277 fs *76* (1967Wa13), 187 fs *62* (1968Ku05), 250 fs *35* (1972Br17), 198 fs *35* (1974Fi16).
4456.2 *9*	2$^+$	<30 fs	T$_{1/2}$: From 1976Fi02. Other value: 37 FS 6 (1993Ol05).
5146.0 *9*	2$^-$	0.62 ps *28*	T$_{1/2}$: Other value: 0.8 ps *+4−3* (1976Fi02).
5334 *2*	1$^+$	<3 fs	
5363.4 *11*	2$^+$	69 fs *12*	J$^\pi$: From Adopted Levels. T$_{1/2}$: Other value: <20 fs (1976Fi02).
5524.5 *8*	4$^+$	26 fs *4*	T$_{1/2}$: Other value: <35 fs (1976Fi02).
5641.5 *11*	3$^+$	<3 fs	T$_{1/2}$: Other value: <40 fs (1976Fi02). J$^\pi$: From 1976Fi02.
5911 *2*	3$^-$	33 fs *11*	T$_{1/2}$: Other value: 35 fs *16* (1976Fi02).
6119.9 *16*	2$^+$	24 fs *9*	
6235 *2*	0$^+$	236 fs *83*	
6311.0 *10*	(6)$^+$	48 fs *4*	
6346.3 *14*	4$^+$	13 fs *3*	
6635.8 *8*	(3,4)$^+$	49 fs *21*	J$^\pi$: From Adopted Levels. T$_{1/2}$: Other value: 48 fs *14* (1976Fi02).
6689 *11*		243 fs *132*	
6819.4 *16*	2$^+$	<3 fs	
6853.6 *16*	1$^+$	120 fs *60*	
6900 *2*	0$^+$	76 fs *8*	
7051 *3*	1$^-$	100 fs *30*	
7341.1 *11*	0$^+$	<3 fs	
7344.7 *7*	3$^+$	35 fs *21*	
7405.9 *7*	1$^-$	32 fs *10*	J$^\pi$: (3)$^-$ in Adopted Levels considering γ feeding from 4$^+$ state. 3,5 in 1976Br06. T$_{1/2}$: Other value: 63 fs *+38−26* (1976Fi02).
7423.0 *11*	(5$^+$)	<3 fs	T$_{1/2}$: Other value: 47 fs *15* (1976Fi02).
7469 *2*	1,2	55 fs *21*	
7489 *5*			
7643.1 *13*			
7663.7 *9*			
7722.0 *11*			
7921 *2*			
8076.9 *14*			
8134.3 *4*			
8162.2 *13*			
8375.9 *16*			
8489.6 *12*			
8552 *4*			
8596.0 *9*			
8741.0 *14*			

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^{19}F(α,pγ) 1993Ol05,1976Br06,1976Fi02 (continued)

^{22}Ne Levels (continued)

E(level)[†]	J$^\pi$[#]	Comments
8855.3 *15*		
8900.3 *16*		
8976 *3*		
9045 *3*		
9097 *3*		E(level): From 1976Fi02. 1993Ol05 did not report this level due to unresolved transitions from this level.
9178.1 *7*		
9229 *3*		
9234 *2*		
9250 *3*		
9324 *2*		
9485[‡] *20*		
9609[‡] *20*	5[‡]	
9697[‡] *20*		
9838[‡] *20*		
10105[‡] *20*		
10183[‡] *20*		
10269[‡] *20*		
10405?[‡] *20*	6,8[‡]	
10634[‡] *20*	5[‡]	
10755[‡] *20*	5[‡]	
11000[‡] *20*	8[‡]	
11102[‡] *20*	6,7,8[‡]	
11482[‡] *20*	7[‡@]	

[†] From 1993Ol05, except as noted.
[‡] From 1976Br06.
[#] From 1993Ol05, except as noted. J^π values were inferred from multipolarities and mixing ratios determined by $\gamma(\theta)$ and Hauser-Feshbach calculations.
[@] From angular correlations (1970Br28), analysis of cross sections, and comparison with shell model calculations.

γ(^{22}Ne)

E$_i$(level)	J$_i^\pi$	E$_\gamma$[†]	I$_\gamma$[†]	E$_f$	J$_f^\pi$	Mult.[†]	δ[†]	Comments
1274.61	2$^+$	1274.57	100	0.0	0$^+$	E2		Mult.: From 1976Fi02.
3358.7	4$^+$	2084.0	100	1274.61	2$^+$	E2		Mult.: From 1976Fi02.
4456.2	2$^+$	3181.3	100.0[‡] *21*	1274.61	2$^+$	M1+E2	+0.09 *2*	Mult.: From 1976Fi02.
		4455.7	3.1[‡] *21*	0.0	0$^+$			
5146.0	2$^-$	689.8	89 *8*	4456.2	2$^+$	E1+M2	−0.29 *2*	
		3871.0	100 *8*	1274.61	2$^+$	E1+M2	+0.96 *18*	
5334	1$^+$	4059	50 *12*	1274.61	2$^+$	M1+E2	+2.0 *6*	δ: Alternate value: −0.8 *4*.
		5333	100 *12*	0.0	0$^+$			
5363.4	2$^+$	4088.4	100 *4*	1274.61	2$^+$	M1+E2	−0.12 *6*	δ: Alternate value: −3.5 *3*. Other: −0.27 *8* from 1976Fi02.
		5362.7	16 *4*	0.0	0$^+$			
5524.5	4$^+$	2165.7	100 *1*	3358.7	4$^+$	M1+E2	−0.04 *3*	δ: Other value: 0.07 *12* (1976Fi02).
		4249.5	4 *1*	1274.61	2$^+$	E2		
5641.5	3$^+$	2282.7	50 *6*	3358.7	4$^+$	M1+E2	−0.12 *17*	δ: From 1976Fi02. Alternate value 5 *3*. Other: 0.00 *10* from 1976Br06.

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^{19}F(α,pγ) 1993Ol05,1976Br06,1976Fi02 (continued)

γ(^{22}Ne) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.†	δ†	Comments
5641.5	3^+	4366.4	100 *6*	1274.61	2^+	M1+E2	+0.18 *3*	δ: From 1976Fi02. Other: +0.16 *3* (1976Fi02), +0.19 *4* (1967Bu01), +0.13 *3* (1972Ho52 in (t,pγ)).
5911	3^-	1454.8	21 *6*	4456.2	2^+	E1+M2	+0.19 *10*	
		2552.1	21 *6*	3358.7	4^+			
		4635.9	100 *6*	1274.61	2^+	E1+M2	+0.17 *6*	
6119.9	2^+	1663.6	17 *4*	4456.2	2^+	M1+E2	+1.1 *3*	
		4844.7	100 *4*	1274.61	2^+	M1+E2	+2.3 *3*	δ: Alternate value: −0.11 *4*.
		6119.0	4 *3*	0.0	0^+			
6235	0^+	901		5334	1^+			
6311.0	$(6)^+$	2952.1	100	3358.7	4^+			
6346.3	4^+	2987.4	100	3358.7	4^+	M1+E2	+0.68 *16*	E_γ: From 1976Fi02. Not reported by 1993Ol05.
6635.8	$(3,4)^+$	3276.8	89 *6*	3358.7	4^+	M1+E2	−0.9 *3*	
		5360.5	100 *6*	1274.61	2^+			
6689		5414	45 *9*	1274.61	2^+			
		6688	100 *9*	0.0	0^+			
6819.4	2^+	1455.9	43 *16*	5363.4	2^+			
		1673.3	57 *16*	5146.0	2^-			
		2363.1	100 *16*	4456.2	2^+	M1+E2	+2.5 *4*	δ: Alternate value: −0.14 *8*.
		5544.0	70 *16*	1274.61	2^+	M1+E2	+0.10 *10*	δ: Alternate value: +2.4 *4*.
6853.6	1^+	5578.2	85 *8*	1274.61	2^+	M1+E2	+1.3 *5*	I_γ: Other value: 39 *10* (1976Fi02). δ: Alternate value: −0.75 *20*.
		6852.5	100 *8*	0.0	0^+			
6900	0^+	5625	100	1274.61	2^+	E2		
7051	1^-	5776	100 *5*	1274.61	2^+			
		7050	16 *5*	0.0	0^+			
7341.1	0^+	2007.0	100 *8*	5334	1^+			I_γ: 100 *4* in 1976Fi02.
		2884.7	75 *8*	4456.2	2^+			I_γ: 20 *4* in 1976Fi02.
7344.7	3^+	1433.6	100 *6*	5911	3^-			I_γ: 30 *13* in 1976Fi02.
		3985.6	96 *6*	3358.7	4^+	M1+E2	−0.7 *3*	I_γ: 100 *13* in 1976Fi02.
7405.9	1^-	2259.8	100 *3*	5146.0	2^-	M1+E2	+1.3 *4*	δ: Alternate value: −0.75 *20*.
		6130.4	56 *3*	1274.61	2^+	E1		Mult.: From 1976Fi02.
7423.0	(5^+)	1898.4	100	5524.5	4^+			
7469	1,2	1558	100	5911	3^-			
7489		1369	10 *6*	6119.9	2^+			
		2126	10 *6*	5363.4	2^+			
		6213	23 *6*	1274.61	2^+			
		7488	100 *6*	0.0	0^+			
7643.1		3186.7	42 *5*	4456.2	2^+			
		6367.5	100 *5*	1274.61	2^+			
		7641.7	12 *5*	0.0	0^+			
7663.7		1428.7	100	6235	0^+			
7722.0		1602.0	19 *16*	6119.9	2^+			
		2197.4	25 *16*	5524.5	4^+			
		2575.8	22 *16*	5146.0	2^-			
		3265.5	100 *16*	4456.2	2^+			
		4362.8	78 *16*	3358.7	4^+			
		6446.4	69 *16*	1274.61	2^+			
7921		580	20 *15*	7341.1	0^+			
		1102	29 *15*	6819.4	2^+			
		2396	33 *15*	5524.5	4^+			
		6645	100 *15*	1274.61	2^+			
8076.9		1765.8	50 *22*	6311.0	$(6)^+$			
		2713.3	36 *22*	5363.4	2^+			
		4717.7	100 *22*	3358.7	4^+			
		6801.2	92 *22*	1274.61	2^+			

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^{19}F(α,pγ) 1993Ol05,1976Br06,1976Fi02 (continued)

$\gamma(^{22}Ne)$ (continued)

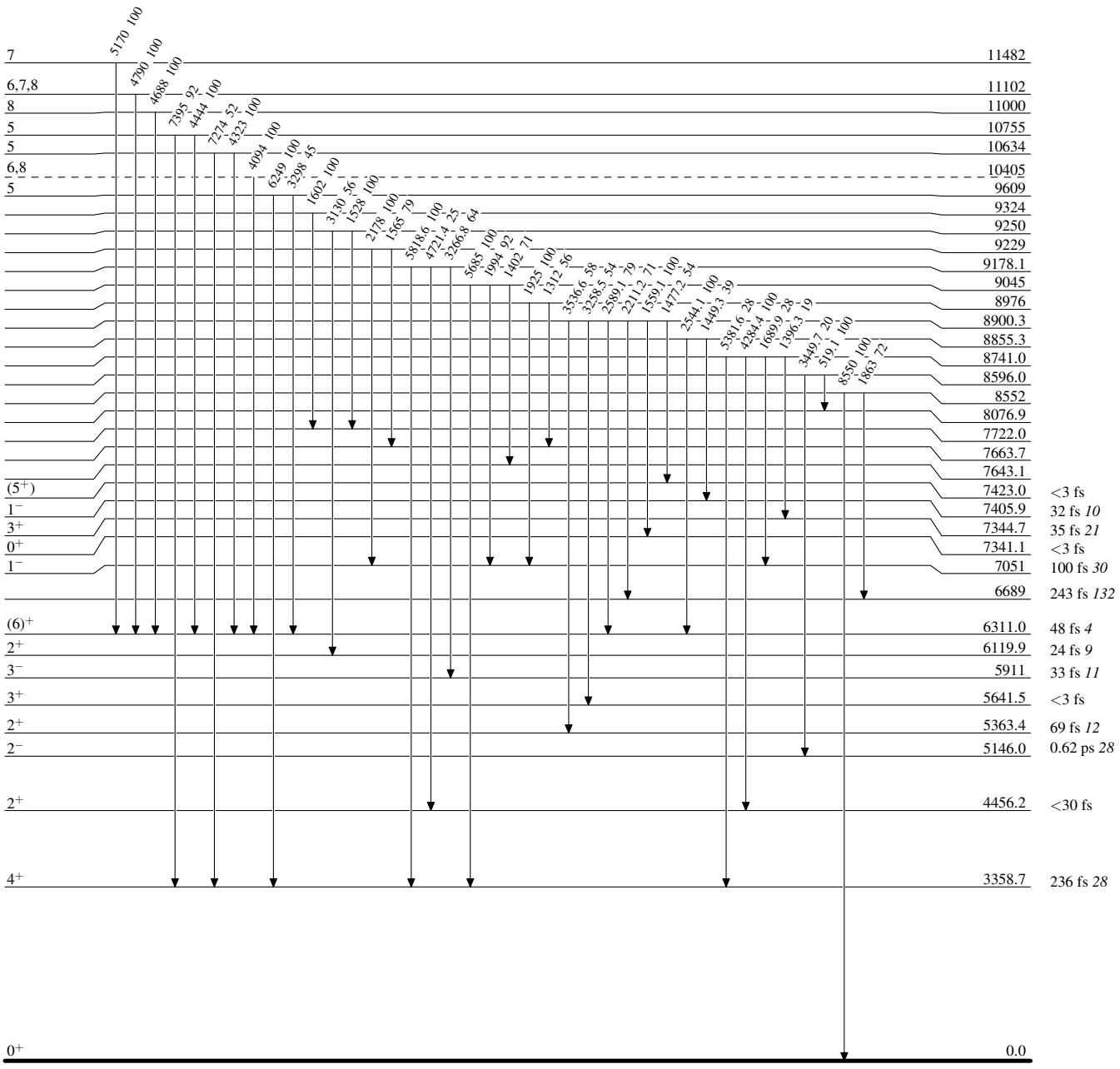
E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
8134.3		1314.9	8 *3*	6819.4	2^+
		6858.5	100 *3*	1274.61	2^+
8162.2		1342.8	8 *8*	6819.4	2^+
		4802.9	44 *8*	3358.7	4^+
		6886.4	100 *8*	1274.61	2^+
8375.9		712.2	8 *7*	7663.7	
		1476[#]	8 *7*	6900	0^+
		5016.6	100 *7*	3358.7	4^+
		7100.1	28 *7*	1274.61	2^+
8489.6		412.7	32 *32*	8076.9	
		1144.9	100 *32*	7344.7	3^+
		2254.5	82 *32*	6235	0^+
		2847.9	71 *32*	5641.5	3^+
		5130.3	71 *32*	3358.7	4^+
8552		1863	72 *12*	6689	
		8550	100 *12*	0.0	0^+
8596.0		519.1	100 *6*	8076.9	
		3449.7	20 *6*	5146.0	2^-
8741.0		1396.3	19 *12*	7344.7	3^+
		1689.9	28 *12*	7051	1^-
		4284.4	100 *12*	4456.2	2^+
		5381.6	28 *12*	3358.7	4^+
8855.3		1449.3	39 *10*	7405.9	1^-
		2544.1	100 *10*	6311.0	$(6)^+$
8900.3		1477.2	54 *33*	7423.0	(5^+)
		1559.1	100 *33*	7341.1	0^+
		2211.2	71 *33*	6689	
8900.3		2589.1	79 *33*	6311.0	$(6)^+$
		3258.5	54 *33*	5641.5	3^+
		3536.6	58 *33*	5363.4	2^+
8976		1312	56 *11*	7663.7	
		1925	100 *11*	7051	1^-
9045		1402	71 *24*	7643.1	
		1994	92 *24*	7051	1^-
		5685	100 *24*	3358.7	4^+
9178.1		3266.8	64 *11*	5911	3^-
		4721.4	25 *11*	4456.2	2^+
		5818.6	100 *11*	3358.7	4^+
9229		1565	79 *9*	7663.7	
		2178	100 *8*	7051	1^-
9250		1528	100 *11*	7722.0	
		3130	56 *11*	6119.9	2^+
9324		1602	100	7722.0	
9609	5	3298	45	6311.0	$(6)^+$
		6249	100	3358.7	4^+
10405?	6,8	4094	100	6311.0	$(6)^+$
10634	5	4323	100	6311.0	$(6)^+$
		7274	52	3358.7	4^+
10755	5	4444	100	6311.0	$(6)^+$
		7395	92	3358.7	4^+
11000	8	4688	100	6311.0	$(6)^+$
11102	6,7,8	4790	100	6311.0	$(6)^+$
11482	7	5170	100	6311.0	$(6)^+$

[†] From 1993Ol05, except as noted. From level energy differences. Recoil energy subtracted.
[‡] From 1967Bu01.
[#] Placement should be considered with caution and not adopted: it would be a $(3)^-$ to $(0,1)^+$ transition!

$^{19}F(\alpha,p\gamma)$ 1993Ol05,1976Br06,1976Fi02

Level Scheme

Intensities: Relative photon branching from each level

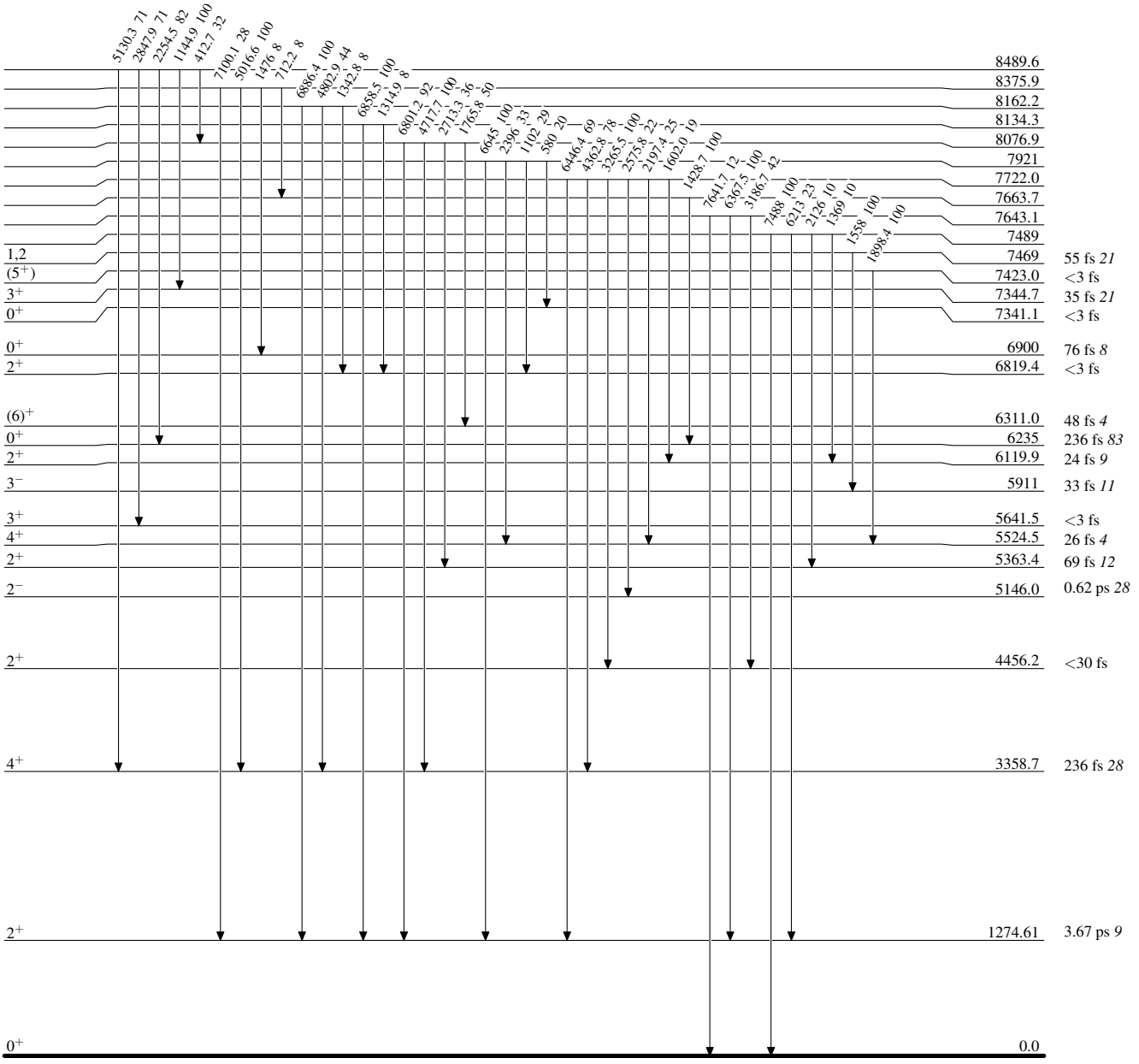


$^{22}_{10}Ne_{12}$

$^{19}F(\alpha,p\gamma)$ 1993Ol05,1976Br06,1976Fi02

Level Scheme (continued)

Intensities: Relative photon branching from each level

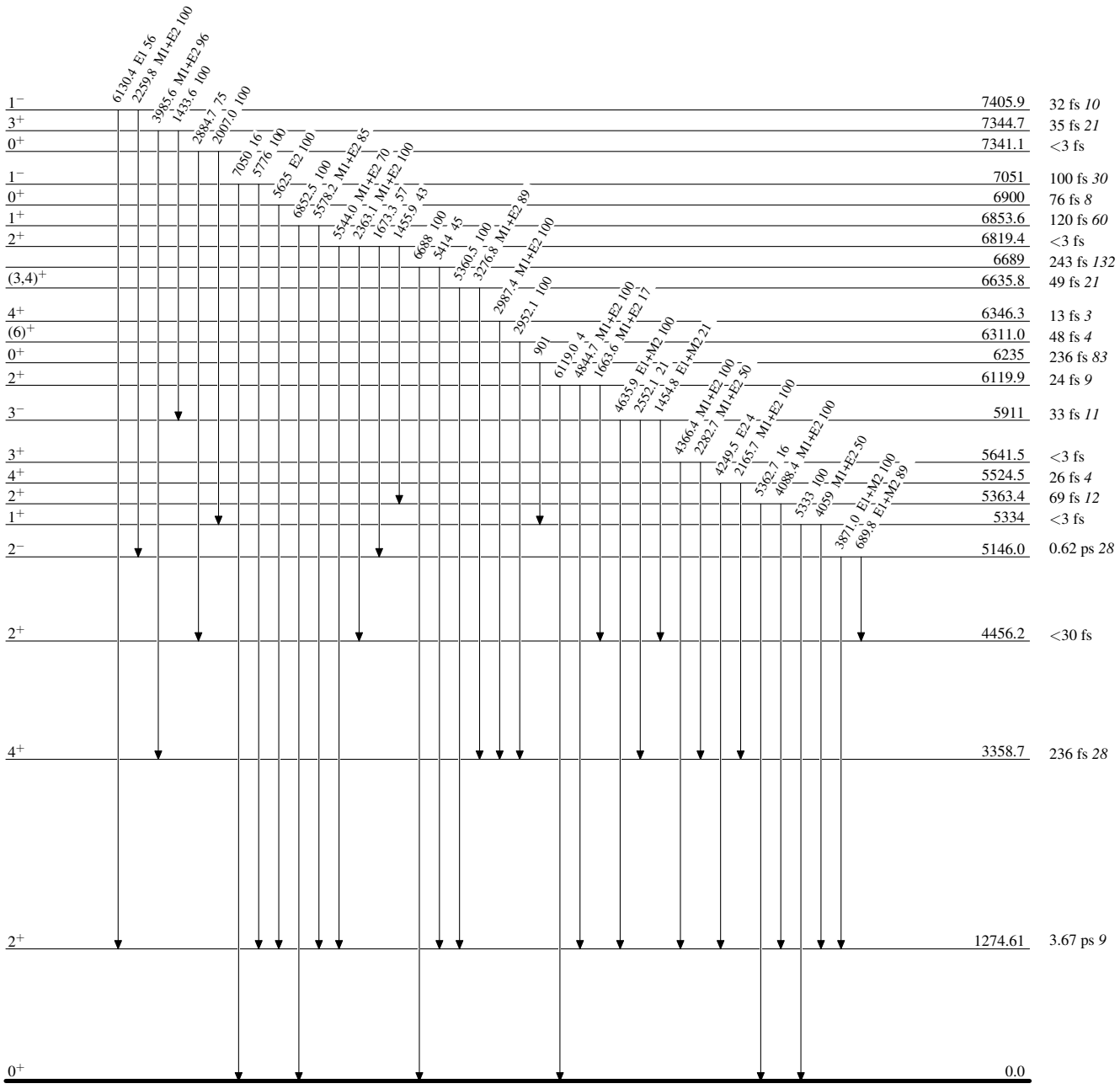


$^{22}_{10}Ne_{12}$

$^{19}F(\alpha,p\gamma)$ 1993Ol05,1976Br06,1976Fi02

Level Scheme (continued)

Intensities: Relative photon branching from each level

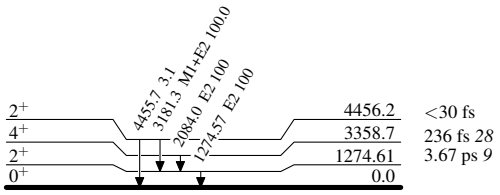


$^{22}_{10}Ne_{12}$

^{19}F(α,pγ) 1993Ol05,1976Br06,1976Fi02

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{22}_{10}Ne_{12}$