

$^{26}\text{Mg}(\text{d},\text{p}\gamma)$ 1977Br07,1974Me28

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia		NDS 112, 1875 (2011)	30-Nov-2010

Others: 1972Co08, 1970Sk06, 1969Mc15, 1969Sy01, 1965Gl05, 1964Cu05.

1977Br07: $^{26}\text{Mg}(\text{d},\text{p}\gamma)$: Target: 99% enriched ^{26}Mg ; Projectile: d, E=5.5, 6.5 MeV; Detectors: annular surface barrier detector, Ge(Li); Measured: $E\gamma$, $\text{p-}\gamma(\theta)$, Doppler Shift Attenuation; Deduced level scheme, J, π , γ -ray branching, γ -ray angular correlation coef., $T_{1/2}$, δ .

1974Me28: $^{26}\text{Mg}(\text{d},\text{p})$: Target: 99.4% enriched ^{26}Mg ; Projectile: d, E=12 MeV; protons were detected by 7 position sensitive detectors in the focal plane of an Enge split-pole spectrograph; Measured: p energy and angular distribution between 5° and 120° in step of 5° ; deduced excitation energy, L value and spectroscopic factors, (2J+1)S.

 ^{27}Mg Levels

E(level) [†]	J^π [‡]	$T_{1/2}$ [‡]	L ^{&}	(2J+1)S ^{&}	Comments
0	1/2 ⁺		0	1.5	
984.6 1	3/2 ⁺	0.97 [#] ps 24	2	2.4	
1697.9 1	5/2 ⁺	0.81 [#] ps 17	2	0.76	
1940.0 1	5/2 ⁺	0.65 [#] ps 14	2	0.06	
3109.4 2	7/2 ⁺	71 [@] fs 18			
3426.9 5	5/2 ⁺ , 7/2 ⁺	69 fs 34			
3475.4 2	1/2, 3/2	<6.9 fs	0	0.58	
3490.7 7	3/2 ⁺ , 5/2 ⁺	<9.7 fs	2	0.24	
3559.5 1	3/2 ⁻	<7 fs	1	1.6	
3760.4 1	5/2 ⁻ , 7/2 ⁻	0.42 [@] ps 7	3	4.5	
3785.9 4	3/2 ⁺	<17 fs	2	0.58	
3884 2	5/2 ⁺ , 9/2 ⁺	>0.5 ps			
4149.8 4	3/2 ⁺ , 5/2 ⁺	<7 fs	2	0.20	
4398.2 5	5/2 ⁺ , 9/2 ⁺	45 fs 24			
4552.8 6	3/2 ⁺ , 5/2 ⁺	<9 fs	2	0.03	
4776.1 8	7/2	<24 fs			
4827.3 4	1/2 ⁻	<7 fs	1	0.62	
4992.3 9	3/2 ⁻ , 5/2 ⁺	<7 fs	(2)	(0.01)	
5028 1	1/2 ⁺	<28 fs	0	0.05	J^π : L=0.
5172 1	3/2 ⁺ , 5/2 ⁺	<10 fs	2	0.02	
5296 1	5/2, 7/2, 9/2	<41 fs			
5372 1	(5/2 ⁻)	<16 fs	(3)	(0.04)	
5412 1	5/2 ⁺ , 7/2	<7 fs			
5422 1	1/2 ⁻ , 3/2 ⁻	<7 fs	1	0.01	J^π : L=1.
5627 1	3/2 ⁺ , 5/2 ⁺	<7 fs	2	0.68	
5749 2	5/2 to 9/2	<17 fs			
5764 1	3/2 ⁺ , 5/2 ⁺	<17 fs	2	0.04	J^π : L=2.
5821 2	3/2 ⁺ , 5/2 ⁺	<7 fs	2	0.05	J^π : L=2.
5829 3	5/2 ⁻ to 11/2 ⁻	<82 fs		(0.02)	
5906 7	1/2 ⁻ , 3/2 ⁻		1	0.05	E(level): From 1974Me28.
5926 2	3/2	34 fs 28			
6009 2	7/2, 9/2	<7 fs			
6084 2	3/2				
6125 3					
6161 2	7/2 ⁺ to 11/2 ⁺				
6312 5					
6336 3	3/2 to 7/2				
6380 3	1/2, 3/2				
6508 3	5/2, 9/2				
6651 3					

Continued on next page (footnotes at end of table)

$^{26}\text{Mg}(\text{d},\text{p}\gamma)$ 1977Br07,1974Me28 (continued) ^{27}Mg Levels (continued)

<u>E(level)[†]</u>	<u>E(level)[†]</u>	<u>E(level)[†]</u>	<u>E(level)[†]</u>
6721 4	6991 4	7505 3	7859 4
6811 3	7013 5	7530 3	7927 5
6859 2	7147 2	7690 3	7976 4
6921 3	7278 3	7700 3	

[†] From 1977Br07. Spin assignments are based on analysis of angular correlation co-efficients in 1977Br07, except otherwise noted.

[‡] From 1977Br07, except otherwise noted.

Weighted average of data from 1972Co08 and 1969Mc15.

@ Weighted average of data from 1977Br07, 1972Co08 and 1969Mc15.

& From 1974Me28.

 $\gamma(^{27}\text{Mg})$

<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ[†]</u>	<u>I_γ[‡]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[#]</u>	<u>δ[@]</u>	<u>Comments</u>
984.6	3/2 ⁺	984.6	100.0	0	1/2 ⁺	M1+E2	+0.22 2	A ₂ =0.04 1 (1977Br07). δ: From 1972Co08.
1697.9	5/2 ⁺	1697.9	100.0	0	1/2 ⁺	E2		A ₂ =0.34 1, A ₄ =-0.13 2 (1977Br07).
1940.0	5/2 ⁺	242.1	2.3 8	1697.9	5/2 ⁺			
		955.4	100.0 15	984.6	3/2 ⁺	M1+E2	-0.07 6	δ: Weighted average of -0.05 4 (1972Co08) and -0.20 9 (1977Br07). Other: 0.5-4.0 (1969Sy01).
3109.4	7/2 ⁺	1940.0	50.0 15	0	1/2 ⁺			
		1169.4	100 13	1940.0	5/2 ⁺	M1+E2	-0.23 +19-6	A ₂ =-0.48 4, A ₄ =-0.02 4 (1977Br07).
		1411.5	4 3	1697.9	5/2 ⁺			
		2124.8	4 3	984.6	3/2 ⁺			
3426.9	5/2 ⁺ , 7/2 ⁺	317.5	3.4 17	3109.4	7/2 ⁺			
		1486.9	5 3	1940.0	5/2 ⁺			
		1729.0	64 9	1697.9	5/2 ⁺	D+Q	+0.05 +3-8	A ₂ =-0.25 6, A ₄ =0.06 6 (1977Br07).
		2442.3	100 12	984.6	3/2 ⁺			A ₂ =0.23 4, A ₄ =-0.11 5 (1977Br07).
3475.4	1/2, 3/2	1777.5	1.0 10	1697.9	5/2 ⁺			
		2490.8	2.0 10	984.6	3/2 ⁺			
		3475.4	100 13	0	1/2 ⁺			
3490.7	3/2 ⁺ , 5/2 ⁺	1792.8	30 9	1697.9	5/2 ⁺			
		2506.1	100 18	984.6	3/2 ⁺			A ₂ =0.17 4 (1977Br07).
		3490.7	98 36	0	1/2 ⁺			
3559.5	3/2 ⁻	1861.6	2.00 20	1697.9	5/2 ⁺			
		2574.9	6.5 11	984.6	3/2 ⁺	(E1)		A ₂ =0.25 5 (1977Br07).
		3559.5	100.0 11	0	1/2 ⁺			A ₂ =-0.42 1 (1977Br07).
3760.4	5/2 ⁻ , 7/2 ⁻	2062.5	100.0	1697.9	5/2 ⁺	D		A ₂ =-0.22 1, A ₄ =0.00 1 (1977Br07).
3785.9	3/2 ⁺	676.5	6.3 20	3109.4	7/2 ⁺			
		1845.9	33 6	1940.0	5/2 ⁺			A ₂ =0.01 3 (1977Br07).
		2088.0	65 13	1697.9	5/2 ⁺			A ₂ =0.08 3 (1977Br07).
		2801.3	4.2 20	984.6	3/2 ⁺			
		3785.9	100 13	0	1/2 ⁺			A ₂ =-0.05 3 (1977Br07).
3884	5/2 ⁺ , 9/2 ⁺	457	7 4	3426.9	5/2 ⁺ , 7/2 ⁺			A ₂ =-0.18 8, A ₄ =-0.09 8 (1977Br07).
		775	7 4	3109.4	7/2 ⁺			
		1944	100 21	1940.0	5/2 ⁺			A ₂ =0.50 2 (1977Br07).
		2186	8.6 25	1697.9	5/2 ⁺			
4149.8	3/2 ⁺ , 5/2 ⁺	2209.8	28.6 20	1940.0	5/2 ⁺	D+(Q)	-0.4 +4-3	
		2451.9	75.5 20	1697.9	5/2 ⁺	D+Q	-0.23 +5-2	

Continued on next page (footnotes at end of table)

$^{26}\text{Mg}(\text{d},\text{p}\gamma)$ **1977Br07,1974Me28** (continued) $\gamma(^{27}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. #	$\delta^@$	Comments
4149.8	$3/2^+, 5/2^+$	3165.2	100 4	984.6	$3/2^+$	D+Q	+0.16 6	
4398.2	$5/2^+, 9/2^+$	514.2	15 5	3884	$5/2^+, 9/2^+$			
		971.3	32 7	3426.9	$5/2^+, 7/2^+$			
		1288.8	98 15	3109.4	$7/2^+$	D+(Q)	-0.13 6	$A_2=-0.50$ 4, $A_4=0.03$ 5 (1977Br07).
		2700.3	100 15	1697.9	$5/2^+$			$A_2=0.44$ 7, $A_4=-0.09$ 9 (1977Br07).
4552.8	$3/2^+, 5/2^+$	1443.4	10 4	3109.4	$7/2^+$			
		2612.8	100 19	1940.0	$5/2^+$	D+Q	+0.42 19	$A_2=0.23$ 4, $A_4=0.07$ 5 or $A_2=0.26$ 4 (1977Br07).
		2854.9	19 8	1697.9	$5/2^+$			$A_2=0.44$ 8 (1977Br07).
		3568.2	48 13	984.6	$3/2^+$			
		4552.8	15 4	0	$1/2^+$			
4776.1	$7/2$	892.1	48 14	3884	$5/2^+, 9/2^+$			$A_2=-0.07$ 9, $A_4=-0.09$ 8 (1977Br07).
		1349.2	14 9	3426.9	$5/2^+, 7/2^+$			
		1666.7	66 14	3109.4	$7/2^+$			$A_2=0.51$ 7, $A_4=0.03$ 7 (1977Br07).
		2836.1	100 36	1940.0	$5/2^+$			
4827.3	$1/2^-$	1267.8	14 4	3559.5	$3/2^-$			
		1336.6	5.9 20	3490.7	$3/2^+, 5/2^+$			
		1351.9	9.8 20	3475.4	$1/2, 3/2$			
		3842.7	100 16	984.6	$3/2^+$			
		4827.3	67 10	0	$1/2^+$			
4992.3	$3/2^-, 5/2^+$	1231.9	10 4	3760.4	$5/2^-, 7/2^-$			
		1565.4	8 4	3426.9	$5/2^+, 7/2^+$			
		1882.9	13 7	3109.4	$7/2^+$			
		3052.3	8 6	1940.0	$5/2^+$			
		4007.7	100 21	984.6	$3/2^+$			
5028	$1/2^+$	1469	41 13	3559.5	$3/2^-$			
		1537	14 5	3490.7	$3/2^+, 5/2^+$			
		1553	23 7	3475.4	$1/2, 3/2$			
		4043	100 21	984.6	$3/2^+$			
5172	$3/2^+, 5/2^+$	1022	11 4	4149.8	$3/2^+, 5/2^+$			
		1386	22 7	3785.9	$3/2^+$			
		3474	100 20	1697.9	$5/2^+$			
		4187	38 7	984.6	$3/2^+$			
		5172	51 9	0	$1/2^+$			$A_2=0.38$ 8 (1977Br07).
5296	$5/2, 7/2, 9/2$	1412	88 26	3884	$5/2^+, 9/2^+$			$A_2=0.43$ 13, $A_4=0.02$ 12 (1977Br07).
		1536	27 15	3760.4	$5/2^-, 7/2^-$			
		2187	100 32	3109.4	$7/2^+$			
		3598	79 29	1697.9	$5/2^+$			
5372	$(5/2^-)$	1612	24 9	3760.4	$5/2^-, 7/2^-$			$A_2=0.13$ 11, $A_4=-0.05$ 9 (1977Br07).
		1813	44 11	3559.5	$3/2^-$	D+Q	+0.4 +2-3	$A_2=0.07$ 8, $A_4=-0.15$ 9 (1977Br07).
		1881	18 7	3490.7	$3/2^+, 5/2^+$	D+Q	+0.4 +5-3	$A_2=0.22$ 10, $A_4=-0.01$ 10 (1977Br07).
		3674	100 22	1697.9	$5/2^+$	D+Q	-0.6 +5-3	$A_2=-0.19$ 6, $A_4=-0.04$ 7 (1977Br07).
		4387	36 13	984.6	$3/2^+$			
5412	$5/2^+, 7/2$	1528	11 7	3884	$5/2^+, 9/2^+$			
		1985	7 4	3426.9	$5/2^+, 7/2^+$			
		2303	15 4	3109.4	$7/2^+$			$A_2=0.41$ 9, $A_4=-0.03$ 10 (1977Br07).
		3472	85 20	1940.0	$5/2^+$			$A_2=-0.26$ 7, $A_4=0.03$ 7 (1977Br07).
		3714	100 24	1697.9	$5/2^+$			
5422	$1/2^-, 3/2^-$	4437	100.0	984.6	$3/2^+$			
5627	$3/2^+, 5/2^+$	800	2.6 6	4827.3	$1/2^-$			
		2152	12 5	3475.4	$1/2, 3/2$			
		3687	71 17	1940.0	$5/2^+$			
		3929	43 12	1697.9	$5/2^+$			
		4642	10 5	984.6	$3/2^+$			
		5627	100 14	0	$1/2^+$			
5749	$5/2$ to $9/2$	2640	100 26	3109.4	$7/2^+$			$A_2=0.76$ 10, $A_4=0.02$ 10 (1977Br07).

Continued on next page (footnotes at end of table)

$^{26}\text{Mg}(\text{d},\text{p}\gamma)$ **1977Br07,1974Me28 (continued)** $\gamma(^{27}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Comments
5749	5/2 to 9/2	3809	58 26	1940.0	5/2 ⁺	
		4051	42 14	1697.9	5/2 ⁺	
5764	3/2 ⁺ , 5/2 ⁺	4066	100.0	1697.9	5/2 ⁺	
5821	3/2 ⁺ , 5/2 ⁺	1671	14 4	4149.8	3/2 ⁺ , 5/2 ⁺	
		2330	14 6	3490.7	3/2 ⁺ , 5/2 ⁺	
		2394	18 8	3426.9	5/2 ⁺ , 7/2 ⁺	
		2712	46 8	3109.4	7/2 ⁺	$A_2=-0.22$ 8, $A_4=0.04$ 7 (1977Br07).
		4123	8 4	1697.9	5/2 ⁺	
		4836	100 14	984.6	3/2 ⁺	$A_2=0.10$ 6, $A_4=0.05$ 7 (1977Br07).
5829	5/2 ⁻ to 11/2 ⁻	1431	35 16	4398.2	5/2 ⁺ , 9/2 ⁺	
		2069	100 31	3760.4	5/2 ⁻ , 7/2 ⁻	$A_2=0.45$ 3, $A_4=-0.04$ 3 (1977Br07).
5926	3/2	3986	49 11	1940.0	5/2 ⁺	
		4941	40 9	984.6	3/2 ⁺	
		5926	100 21	0	1/2 ⁺	$A_2=-0.20$ 4 (1977Br07).
6009	7/2, 9/2	2582	100 29	3426.9	5/2 ⁺ , 7/2 ⁺	$A_2=0.40$ 6, $A_4=0.03$ 6 (1977Br07).
		5024	44 21	984.6	3/2 ⁺	
		6009	65 33	0	1/2 ⁺	
6084	3/2	2298	35 12	3785.9	3/2 ⁺	
		2324	65 15	3760.4	5/2 ⁻ , 7/2 ⁻	
		2525	12 4	3559.5	3/2 ⁻	
		2593	27 8	3490.7	3/2 ⁺ , 5/2 ⁺	
		4144	42 12	1940.0	5/2 ⁺	
		4386	19 8	1697.9	5/2 ⁺	
		5099	100 23	984.6	3/2 ⁺	
		6084	85 15	0	1/2 ⁺	$A_2=-0.30$ 5 (1977Br07).
6125		2698	91 33	3426.9	5/2 ⁺ , 7/2 ⁺	
		4185	48 31	1940.0	5/2 ⁺	
		5140	100 43	984.6	3/2 ⁺	
6161	7/2 ⁺ to 11/2 ⁺	1763	23 12	4398.2	5/2 ⁺ , 9/2 ⁺	$A_2=0.42$ 8, $A_4=0.00$ 10 (1977Br07).
		2734	100 31	3426.9	5/2 ⁺ , 7/2 ⁺	$A_2=0.68$ 9, $A_4=-0.12$ 10 (1977Br07).
		3052	69 15	3109.4	7/2 ⁺	
6312		2885	100 49	3426.9	5/2 ⁺ , 7/2 ⁺	
		4372	43 17	1940.0	5/2 ⁺	
6336	3/2 to 7/2	4396	100.0	1940.0	5/2 ⁺	
6380	1/2, 3/2	5395	30 12	984.6	3/2 ⁺	
		6380	100 18	0	1/2 ⁺	
6508	5/2, 9/2	4568	100 33	1940.0	5/2 ⁺	$A_2=0.13$ 7, $A_4=-0.29$ 7 (1977Br07).
		4810	96 33	1697.9	5/2 ⁺	
6651		3542	100.0	3109.4	7/2 ⁺	
6721		1945	23 19	4776.1	7/2	
		2323	66 34	4398.2	5/2 ⁺ , 9/2 ⁺	
		3294	100 42	3426.9	5/2 ⁺ , 7/2 ⁺	
6811		3384	100.0	3426.9	5/2 ⁺ , 7/2 ⁺	
6859		4919	30 17	1940.0	5/2 ⁺	
		5161	56 26	1697.9	5/2 ⁺	
		5874	100 20	984.6	3/2 ⁺	
6921		3161	100.0	3760.4	5/2 ⁻ , 7/2 ⁻	
6991		5051	89 38	1940.0	5/2 ⁺	
		5293	100 45	1697.9	5/2 ⁺	
7013		5073	51 38	1940.0	5/2 ⁺	
		5315	100 47	1697.9	5/2 ⁺	
		6028	71 24	984.6	3/2 ⁺	
7147		5207	100.0	1940.0	5/2 ⁺	
7278		2880	100 44	4398.2	5/2 ⁺ , 9/2 ⁺	
		3851	86 25	3426.9	5/2 ⁺ , 7/2 ⁺	
		4169	92 28	3109.4	7/2 ⁺	

Continued on next page (footnotes at end of table)

$^{26}\text{Mg}(\text{d},\text{p}\gamma)$ [1977Br07](#),[1974Me28](#) (continued) $\gamma(^{27}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π
7505		4078	34 13	3426.9	5/2 ⁺ , 7/2 ⁺	7690		3806	100.0	3884	5/2 ⁺ , 9/2 ⁺
		4396	94 22	3109.4	7/2 ⁺	7700		5760	100.0	1940.0	5/2 ⁺
		5565	100 25	1940.0	5/2 ⁺	7859		3461	100.0	4398.2	5/2 ⁺ , 9/2 ⁺
		5807	84 22	1697.9	5/2 ⁺	7927		4043	100.0	3884	5/2 ⁺ , 9/2 ⁺
7530		3770	100.0	3760.4	5/2 ⁻ , 7/2 ⁻	7976		6036	100.0	1940.0	5/2 ⁺

[†] Deduced by the evaluator from level energy differences. Measured γ -ray energies are not listed in [1977Br07](#). Deduced γ -ray energies depopulating levels above 5829 keV are not included in the Adopted Gammas dataset.

[‡] Branching ratio from [1977Br07](#).

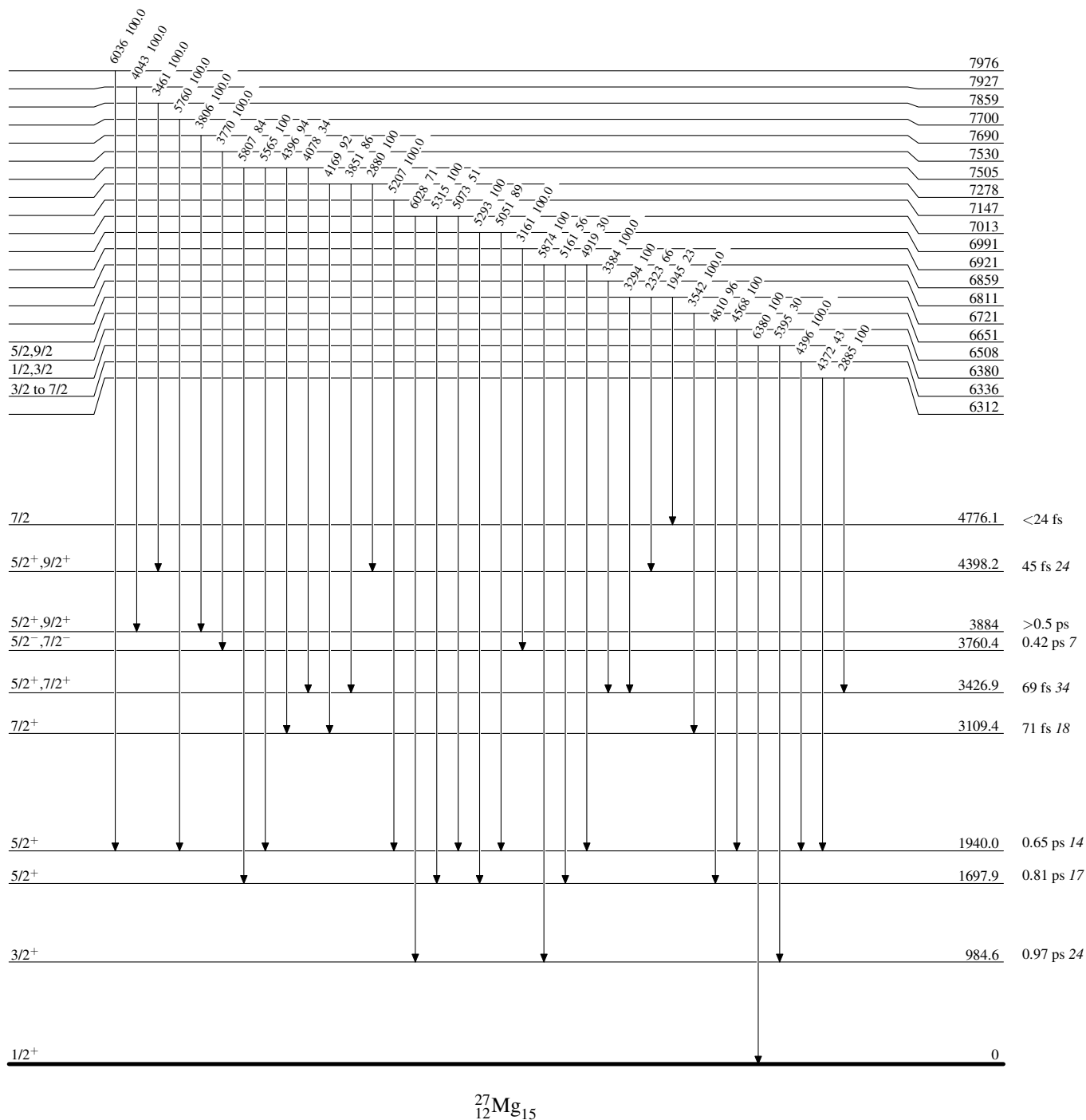
Assigned by the evaluator based on γ -ray angular correlation, reported mixing ratio, and level $T_{1/2}$.

@ From [1977Br07](#), except otherwise noted.

$^{26}\text{Mg}(\text{d},\text{p}\gamma)$ 1977Br07,1974Me28

Level Scheme

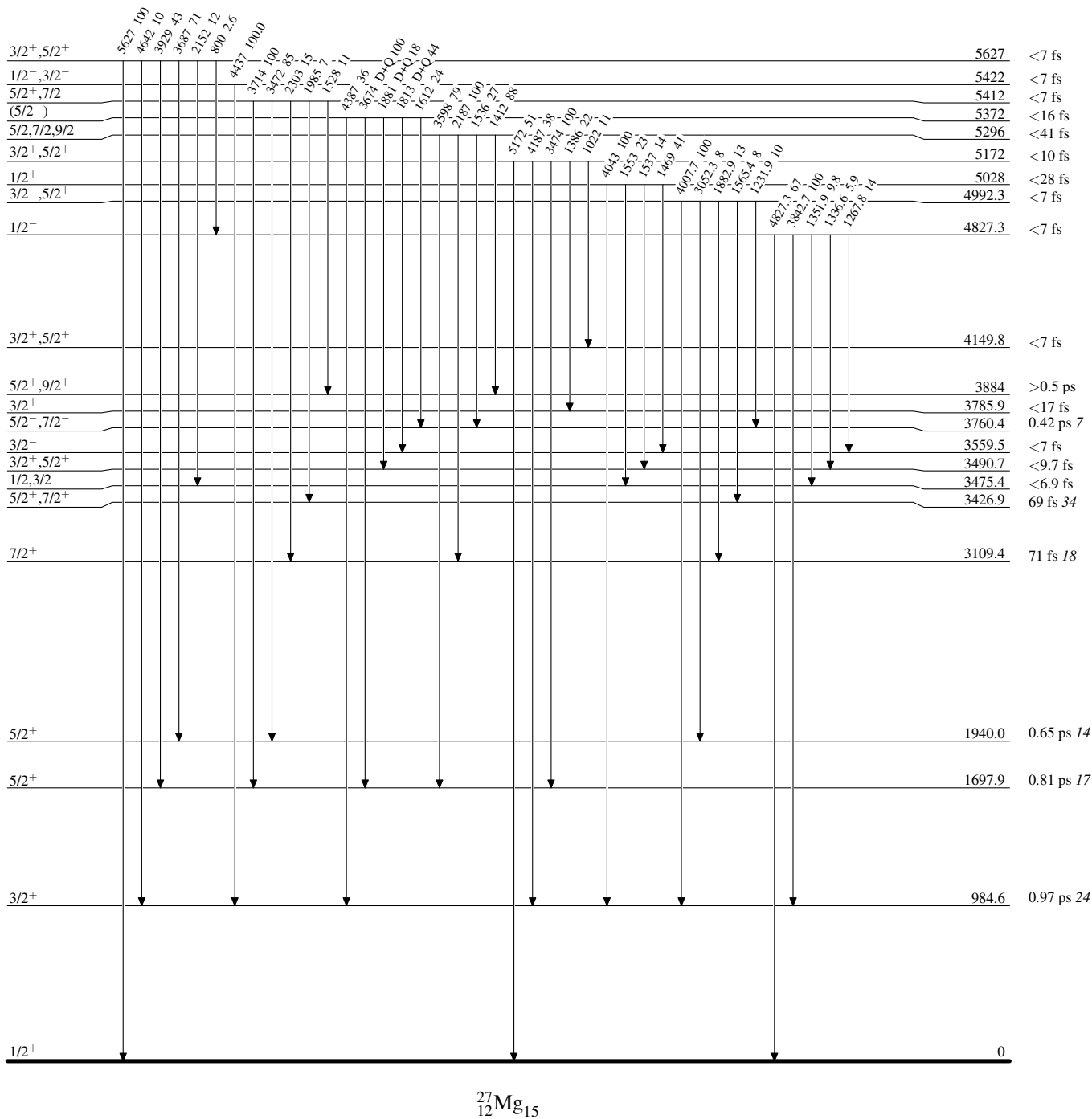
Intensities: Relative photon branching from each level

 $^{27}_{12}\text{Mg}_{15}$

$^{26}\text{Mg}(\text{d},\text{p}\gamma)$ 1977Br07,1974Me28

Level Scheme (continued)

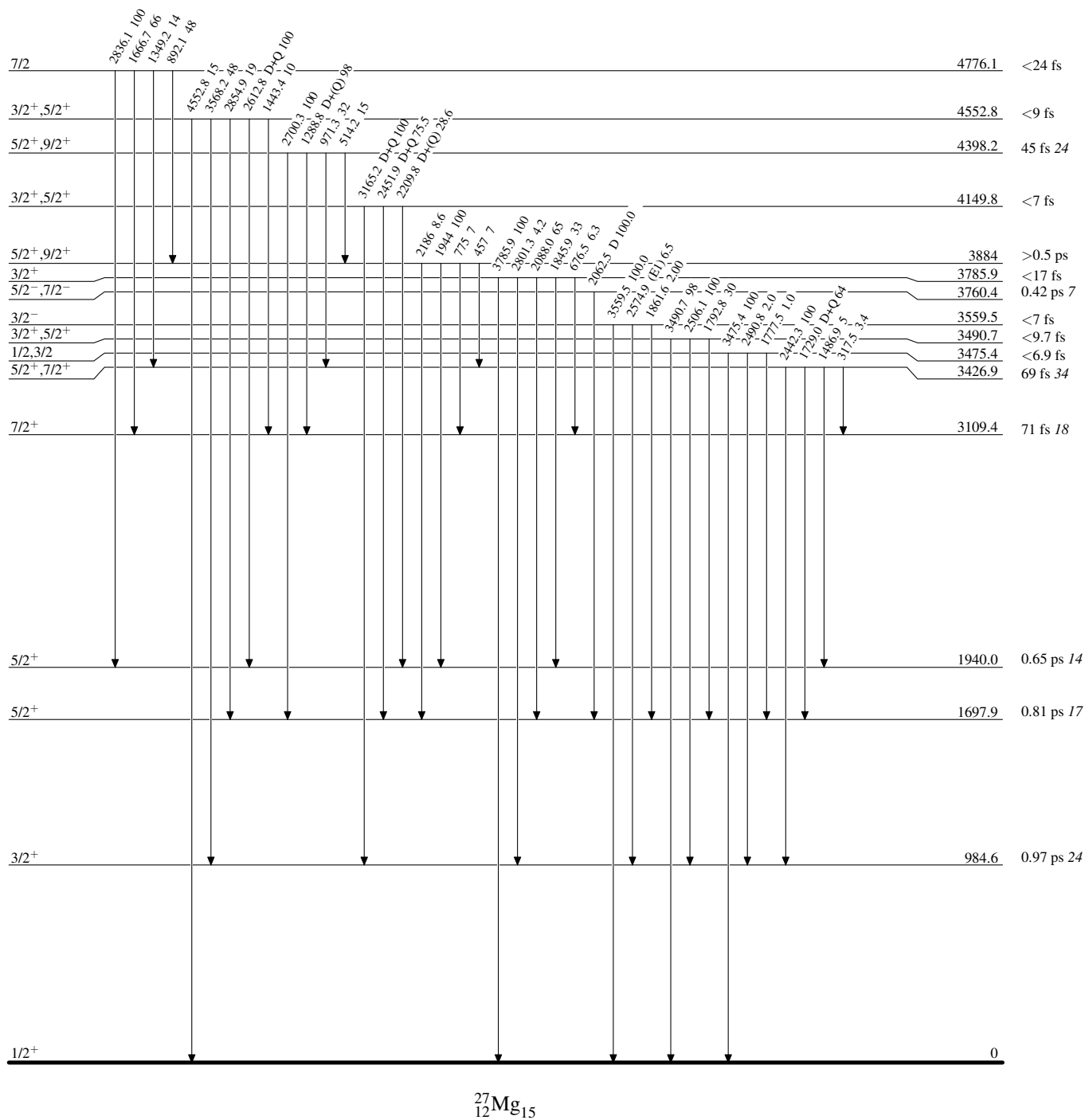
Intensities: Relative photon branching from each level



$^{26}\text{Mg}(\text{d},\text{p}\gamma)$ 1977Br07,1974Me28

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{26}\text{Mg}(\text{d,p}\gamma)$ **1977Br07,1974Me28**

Level Scheme (continued)

Intensities: Relative photon branching from each level

