

$^{21}\text{Ne}(p,\gamma)$ 1982Go11,1978Bi11,1977Be08

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

Other references: 1962Ar04, 1963Ar05, 1964Ar05, 1965Ta02, 1970An06, 1977Ke04, 1978He12, 1983Go21, 1992Be35, 1992Sc08, 1992Sc27.

Other reaction: $^{21}\text{Ne}(p,p')$ – 1975Ch15.

1982Go11: $^{21}\text{Ne}(p,\gamma)$, E=70-355 keV. Measured $\sigma(E\gamma, E)$, $E\gamma$, $I\gamma(E, \theta)$.

1978Bi11: $^{21}\text{Ne}(p,\gamma)$, E=0.50,0.70,0.77,0.81,0.85,1.09,1.13,1.28, 1.78 MeV. Measured $E\gamma$, $I\gamma$, Doppler shift attenuation.

1977Be08: $^{21}\text{Ne}(p,\gamma)$, E=0.4-1.6 MeV. Measured $\sigma(Ep)$, Ep , Ip , $E\gamma$, $I\gamma(\theta)$, excitation functions.

1970An06: $^{21}\text{Ne}(p,\gamma)$, E=0.3-1.0 MeV. Measured $\sigma(E;E\gamma)$, Doppler shift attenuation.

1977Ke04: $^{21}\text{Ne}(p,\gamma)$, E=0.5-2.0 MeV. Measured $\sigma(E)$.

1978He12: $^{21}\text{Ne}(p,\gamma)$, E=0.70-1.84 MeV, Measured $I\gamma(E, \theta)$.

1992Be35: $^{21}\text{Ne}(p,\gamma)$, E=resonance. Measured γ yield.

 ^{22}Na Levels

| E(level) [†] | $T_{1/2}$ [@] | $(2J+1)\Gamma_p\Gamma_\gamma/\Gamma$ | Comments |
|-----------------------|------------------------|--------------------------------------|--|
| 0.0 | | | |
| 582.8 3 | | | |
| 657.0 1 | | | |
| 890.9 3 | | | |
| 1527.7 3 | | | |
| 1937.0 5 | 11 fs 2 | | $T_{1/2}$: Other value: 4 fs 3 from 1970An06 as reported in 1978Bi11. |
| 1951.7 5 | 8 fs 2 | | $T_{1/2}$: Other value: 9 fs 4 from 1970An06 as reported in 1978Bi11. |
| 1983.1 5 | | | |
| 2211.8 6 | | | |
| 2570.8 10 | | | |
| 2969.0 10 | 30 fs 4 | | |
| 3059.9 7 | 22 fs 3 | | $T_{1/2}$: Other value: 28 fs 14 from 1970An06 as reported in 1978Bi11. |
| 3520 | >420 fs | | |
| 3706.7 4 | | | E(level): From Adopted Levels. |
| 3944.4 7 | <0.7 fs | | $T_{1/2}$: Other value: 9 fs 8 from 1970An06 as reported in 1978Bi11. |
| 4071.3 10 | <0.7 fs | | $T_{1/2}$: Other value: <3 fs from 1970An06 as reported in 1978Bi11. |
| 4296 [‡] 2 | | | |
| 4320 | 10 fs 6 | | |
| 4360.2 12 | 5.0 fs 14 | | $T_{1/2}$: Other value: 19 fs 12 from 1970An06 as reported in 1978Bi11. |
| 4583 [‡] 2 | | | |
| 4622 [‡] 2 | | | |
| 4710 2 | | | |
| 4773.5? 20 | 5.9 fs 14 | | |
| 5062 [‡] | | | |
| 5174 [‡] 2 | <1 fs | | |
| 5320 | <0.7 fs | | |
| 5442 5 | | | E(level): From Adopted Levels. |
| 5603 [‡] 2 | <3 fs | | |
| 5700 [‡] 2 | | | |
| 5725 [‡] 2 | | | |
| 5739 [‡] 2 | | | |
| 5959 [‡] 2 | 2.9 fs 8 | | |
| 5988 [‡] 2 | | | |
| 5995 [‡] 2 | | | |
| 6859.3 6 | <12 eV | 0.3×10^{-3} 6 | $E_p=126.3$ 6 (1982Go11). Other: $E_p=126.69$ 4 (relative uncertainty) (1992Be35). Γ from 1992Be35. |

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$^{21}\text{Ne}(p,\gamma)$ **1982Go11,1978Bi11,1977Be08 (continued)** ^{22}Na Levels (continued)

| E(level) [†] | J ^π | T _{1/2} [@] | (2J+1)Γ _p Γ _γ /Γ | Comments |
|-----------------------|---|-------------------------------|--|--|
| 6997.1 4 | | <5 eV | 0.017 3 | Ep=270.67 4 (relative uncertainty) (1992Be35). Other: Ep=271.7 4 (1982Go11). Γ from 1992Be35. |
| 6998.1 4 | | <3 eV | 0.66 10 | Ep=271.56 4 (relative uncertainty) (1992Be35). Other: Ep=271.7 6 (1982Go11). From Ep=271.56 4 (1992Be35) and Sp. Γ from 1992Be35. |
| 7016.4 4 | | <11 eV | 0.016 3 | Ep=290.0 4 (1982Go11). Other: Ep=290.50 4 (relative uncertainty) (1992Be35). Γ from 1992Be35. |
| 7074.9 4 | | <0.1 keV | 0.065 11 | Ep=352.2 4 (1982Go11). |
| 7152 4 | | <0.5 keV | 0.15 3 | Ep=433 4 (1977Be08). |
| 7220 2 | | <0.4 keV | 1.6 3 | Ep=504.4 2 (1977Be08). |
| 7240 2 | | <0.3 keV | 6.1 12 | Ep=524.7 15 (1977Be08). |
| 7278 3 | | <0.5 keV | 1.2 3 | Ep=565 3 (1977Be08). |
| 7279 3 | | <1.5 keV | 0.28 7 | Ep=566 3 (1977Be08). |
| 7360 3 | | <1.0 keV | 0.42 10 | Ep=651 3 (1977Be08). |
| 7372 2 | | <0.5 keV | 0.42 10 | Ep=663 2 (1977Be08). |
| 7378 1 | | <0.5 keV | 0.61 12 | Ep=670 1 (1977Be08). |
| 7401 2 | | <1.5 keV | 1.5 3 | Ep=694 2 (1977Be08). |
| 7408.6 5 | 1 ⁺ | 3.5 keV 6 | 12 3 | J ^π : M1+E2 γ's to 1 ⁺ and 2 ⁺ . J ^π =2 ⁺ excluded from non-interference with the Ep=768 keV (resonance state 7471 keV) (1983Go21). Ep=701.8 5 (1977Be08). Ep=717 2 (1977Be08). |
| 7423 2 | | 2.5 keV 5 | 0.21 5 | Ep=767.9 5 (1977Be08). |
| 7471.7 5 | (2 ⁺) [#] | 3.5 keV 6 | 51 15 | Ep=813.5 1 (1977Be08). |
| 7515.2 10 | | <0.5 keV | 2.3 5 | Ep=846.8 1 (1977Be08). |
| 7547.0 10 | | <0.6 keV | 2.7 5 | Ep=874.5 1 (1977Be08). |
| 7573.5 10 | | <0.5 keV | 1.4 3 | Ep=901 3 (1977Be08). |
| 7599 3 | | 1.9 keV 10 | 1.3 3 | Ep=907.5 20 (1977Be08). |
| 7605 2 | | <0.6 keV | 0.81 16 | Ep=940 3 (1977Be08). |
| 7636 3 | | <0.5 keV | 0.9 2 | Ep=989 3 (1977Be08). |
| 7683 3 | | <0.5 keV | 0.24 5 | J ^π : From 1975Ch15 (p,p') and earlier studies. Ep=1089.0 10 (1977Be08). |
| 7778.2 10 | (1,2) ⁻ | 2.8 keV 7 | 2.9 10 | Ep=1112.5 1 (1977Be08). |
| 7800.6 10 | 1 ⁺ ,2 ⁺ [#] | 2.4 keV 7 | 4.3 13 | Ep=1133.9 1 (1977Be08). |
| 7821.1 10 | | <0.5 keV | 1.0 3 | Ep=1199.5 9 (1977Be08). |
| 7883.7 9 | | <2.6 keV | | No depopulating gamma observed from this level. |
| 7889.1 11 | 4 ⁺ [#] | <0.5 keV | 8 2 | Ep=1205.2 11 (1977Ke04). |
| 7919 2 | 2 ⁻ | 17 keV 4 | 9 3 | Ep=1237.0 21 (1977Ke04). J ^π : Assigned in 1977Ke04 on the basis of γ ray feeding. |
| 7965 2 | | <0.5 keV | 1.7 5 | Ep=1284.3 21 (1977Ke04). |
| 7977 2 | | 10 keV 3 | 3.7 11 | Ep=1296.9 21 (1977Ke04). |
| 8018 4 | | <1.0 keV | 1.0 3 | Ep=1340 4 (1977Be08). |
| 8041 2 | | <0.5 keV | 3.3 10 | Ep=1364.1 21 (1977Ke04). |
| 8101 4 | | 3.8 keV 7 | 2.1 8 | Ep=1427 4 (1977Be08). |
| 8108 2 | | <1.5 keV | 1.7 5 | Ep=1434.4 19 (1977Ke04). |
| 8114 2 | | 3.5 keV 12 | 1.6 5 | Ep=1441.0 15 (1977Ke04). |
| 8165 2 | | 35 keV 10 | 21 7 | Ep=1494.1 15 (1977Ke04). |
| 8197 4 | | <0.6 keV | 1.0 3 | Ep=1528 4 (1977Be08). |
| 8211 2 | | 10 keV 4 | 7 2 | Ep=1542.8 17 (1977Ke04). |
| 8234 2 | | 13 keV 3 | 26 8 | Ep=1566.5 17 (1977Ke04). |
| 8288 2 | | 4.5 keV 10 | | Γ _p =5 keV Ep=1623.2 15 (1977Ke04). |
| 8328 2 | | 2.7 keV 8 | | Γ _p =2 keV Ep=1665.0 15 (1977Ke04). |

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$^{21}\text{Ne}(p,\gamma)$ **1982Go11,1978Bi11,1977Be08 (continued)** ^{22}Na Levels (continued)

| $E(\text{level})^\dagger$ | $T_{1/2}^\circ$ | $(2J+1)\Gamma_p\Gamma_\gamma/\Gamma$ | Comments |
|---------------------------|-----------------|--------------------------------------|-----------------------------|
| 8371 2 | | | $E_p=1710.0$ 13 (1977Ke04). |
| 8404 5 | | | $E_p=1745$ 5 (1966St18). |
| 8436 2 | 5.4 keV 15 | 3.5 7 | $\Gamma_p=8$ keV |
| 8496 2 | 44 keV 4 | 25 5 | $E_p=1778.5$ 16 (1977Ke04). |
| 8538 2 | 13.2 keV 15 | | $\Gamma_p=29$ keV |
| 8562 2 | | 3.6 7 | $E_p=1840.8$ 15 (1977Ke04). |
| 8567 2 | | | $\Gamma_p<8$ keV |
| 8602 2 | 11.2 keV 20 | | $E_p=1884.8$ 17 (1977Ke04). |
| 8613 2 | | | $E_p=1910.4$ 19 (1977Ke04). |
| 8636 2 | 11.0 keV 20 | | $E_p=1915.8$ 21 (1977Ke04). |
| 8675 2 | 5.3 keV 15 | 4.9 10 | $\Gamma_p=2.1$ keV |
| 8741 5 | | | $E_p=1952.3$ 15 (1977Ke04). |
| 8792 5 | | | $E_p=1963.3$ 21 (1977Ke04). |
| 8845 5 | | | $\Gamma_p=5$ keV |
| 8875 5 | | | $E_p=1987.5$ 19 (1977Ke04). |
| | | | $E_p=2028.9$ 20 (1977Ke04). |
| | | | $E_p=2098$ 5 (1966St18). |
| | | | $E_p=2152$ 5 (1966St18). |
| | | | $E_p=2207$ 5 (1966St18). |
| | | | $E_p=2239$ 5 (1966St18). |

† Level energies up to 5995 keV from 1970An06, except otherwise noted. Above this level, energies have been deduced by evaluator using E_p and $Sp(^{22}\text{Na})=6738.71$ keV 18 (2012Wa38).

‡ From 1982Go11.

$^\#$ From Adopted Levels, listed by evaluator for γ -ray multiplicities in this data set.

$^\circ$ From 1978Bi11 for $E<6$ MeV, 1992Be35 for $E=6-7.1$ MeV, 1977Be08 for $E=7.1-8.3$ MeV, and 1977Ke04 for $E>8.3$ MeV.

 $\gamma(^{22}\text{Na})$

| $E_i(\text{level})$ | E_γ^\dagger | I_γ^\dagger | E_f | Comments |
|---------------------|--------------------|---------------------|--------|---|
| 1951.7 | 1294.7 5 | 0.30 7 | 657.0 | |
| | 1368.9 4 | 100.00 7 | 582.8 | |
| 4071.3 | 2088 | 100 ‡ 2 | 1983.1 | |
| | 2543 | 12.6 ‡ 14 | 1527.7 | |
| | 4071 | 3.7 ‡ 6 | 0.0 | |
| 5174 | 3191 | 20 7 | 1983.1 | |
| | 4591 | 100 7 | 582.8 | |
| 5603 | 3651 | 100 | 1951.7 | |
| 5700 | 3748 | 100 | 1951.7 | |
| 5959 | 1599 | 10 ‡ 2 | 4360.2 | |
| | 2899 | 13 ‡ 2 | 3059.9 | |
| | 5376 | 47 6 | 582.8 | I_γ : Weighted average of 56 5 (1982Go11) and 43 3 (1978Bi11). |
| | 5958 | 100 2 | 0.0 | |
| 5988 | 5404 | 100 | 582.8 | |
| 5995 | 5411 | 100 | 582.8 | |
| 6859.3 | 4907.0 | 100 11 | 1951.7 | |
| | 6201.4 | 25 11 | 657.0 | |
| 6997.1 | 2287 | 33 $^\#$ 4 | 4710 | |
| | 5013.4 | 100 $^\#$ 6 | 1983.1 | |
| | 5468.7 | 10 $^\#$ 2 | 1527.7 | |

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$^{21}\text{Ne}(p,\gamma)$ **1982Go11,1978Bi11,1977Be08 (continued)** $\gamma(^{22}\text{Na})$ (continued)

| $E_i(\text{level})$ | E_γ † | I_γ † | E_f |
|---------------------|--------------|-------------------------|--------|
| 6997.1 | 6995.9 | 61 [#] 4 | 0.0 |
| 6998.1 | 1824 | 1.8 [#] 4 | 5174 |
| | 4028.7 | 8.4 [#] 18 | 2969.0 |
| | 5014.4 | 11.8 [#] 10 | 1983.1 |
| | 5045.8 | 58 [#] 4 | 1951.7 |
| | 5060.5 | 3.8 [#] 10 | 1937.0 |
| | 6414.3 | 3.6 [#] 8 | 582.8 |
| | 6996.9 | 100 [#] 4 | 0.0 |
| 7016.4 | 1057.4 | 13 1 | 5959 |
| | 1842.3 | 4.6 2 | 5174 |
| | 2656.0 | 0.4 2 | 4360.2 |
| | 2944.9 | 100 6 | 4071.3 |
| | 4047.0 | 1.4 2 | 2969.0 |
| | 5032.7 | 3.0 4 | 1983.1 |
| | 5064.1 | 45 2 | 1951.7 |
| | 5488.0 | 0.9 4 | 1527.7 |
| | 6124.6 | 13 1 | 890.9 |
| | 7015.2 | 16 1 | 0.0 |
| 7074.9 | 1080 | 13.1 13 | 5995 |
| | 1116 | 35 2 | 5959 |
| | 1337 | 2.2 6 | 5739 |
| | 1350 | 1.3 3 | 5725 |
| | 1375 | 53 6 | 5700 |
| | 1901 | 13.1 9 | 5174 |
| | 2013 | 1.9 6 | 5062 |
| | 2453 | 1.9 6 | 4622 |
| | 2492 | 2.2 6 | 4583 |
| | 2716.2 12 | 2.2 6 | 4360.2 |
| | 2779 | 2.5 6 | 4296 |
| | 3132.0 10 | 2.5 9 | 3944.4 |
| | 3555 | 4.7 6 | 3520 |
| | 4016.3 10 | 7.8 9 | 3059.9 |
| | 5124.3 10 | 21 5 | 1951.7 |
| | 6418.6 10 | 100 6 | 657.0 |
| | 6492.8 10 | 94 6 | 582.8 |
| | 7075.4 10 | 1.9 6 | 0.0 |
| 7152 | 3080 | 34 ^{&} 5 | 4071.3 |
| | 4092 | 8 ^{&} 3 | 3059.9 |
| | 5168 | 47 ^{&} 8 | 1983.1 |
| | 5624 | 100 ^{&} 8 | 1527.7 |
| | 6260 | 24 ^{&} 5 | 890.9 |
| | 7151 | 50 ^{&} 8 | 0.0 |
| 7220 | 2860 | 61 ^{&} 6 | 4360.2 |
| | 3275 | 35 ^{&} 6 | 3944.4 |
| | 4160 | 39 ^{&} 6 | 3059.9 |
| | 5267 | 100 ^{&} 10 | 1951.7 |
| | 5282 | 32 ^{&} 10 | 1937.0 |
| | 6636 | 45 ^{&} 6 | 582.8 |
| | 7219 | 10 ^{&} 3 | 0.0 |
| 7240 | 4180 | 4.9 ^{&} 12 | 3059.9 |
| | 5256 | 100 ^{&} 7 | 1983.1 |

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$^{21}\text{Ne}(p,\gamma)$ **1982Go11,1978Bi11,1977Be08 (continued)** $\gamma(^{22}\text{Na})$ (continued)

| $E_i(\text{level})$ | J_i^π | E_γ | I_γ | E_f | Mult. ^c | δ | Comments |
|---------------------|----------------|------------|--------------------|---------|--------------------|------------------------|--|
| 7240 | | 6348 | 90 $\&$ 7 | 890.9 | | | |
| | | 7239 | 49 $\&$ 7 | 0.0 | | | |
| 7278 | | 2104 | 7.1 $\&$ 13 | 5174 | | | |
| | | 2216 | 4.6 $\&$ 13 | 5062 | | | |
| | | 2656 | 5.1 $\&$ 15 | 4622 | | | |
| | | 3333 | 7.7 $\&$ 15 | 3944.4 | | | |
| | | 4218 | 26 $\&$ 5 | 3059.9 | | | |
| | | 5326 | 100 $\&$ 8 | 1951.7 | | | |
| | | 5340 | 18 $\&$ 3 | 1937.0 | | | |
| | | 6620 | 8.7 $\&$ 13 | 657.0 | | | |
| 7279 | | 6694 | 79 $\&$ 8 | 582.8 | | | |
| | | 3572 | 15 $\&$ 5 | 3706.7 | | | |
| 7360 | | 5750 | 100 $\&$ 5 | 1527.7 | | | |
| | | 2586 | 6.9 $\&$ 17 | 4773.5? | | | |
| 7372 | | 2650 | 5.2 $\&$ 17 | 4710 | | | |
| | | 3840 | 12.1 $\&$ 17 | 3520 | | | |
| | | 4391 | 10.3 $\&$ 17 | 2969.0 | | | |
| | | 5831 | 100 $\&$ 3 | 1527.7 | | | |
| | | 6468 | 19 $\&$ 3 | 890.9 | | | |
| | | 7359 | 19 $\&$ 3 | 0.0 | | | |
| | | 2198 | 26 $\&$ 3 | 5174 | | | |
| | | 3852 | 16 $\&$ 3 | 3520 | | | |
| 7378 | | 4801 | 100 $\&$ 6 | 2570.8 | | | |
| | | 5160 | 19 $\&$ 6 | 2211.8 | | | |
| | | 5388 | 65 $\&$ 6 | 1983.1 | | | |
| | | 5420 | 52 $\&$ 6 | 1951.7 | | | |
| | | 6788 | 16 $\&$ 3 | 582.8 | | | |
| | | 7371 | 29 $\&$ 3 | 0.0 | | | |
| | | 2204 | 33 $\&$ 7 | 5174 | | | |
| | | 3306 | 100 $\&$ 7 | 4071.3 | | | |
| 7401 | | 5394 | 13 $\&$ 3 | 1983.1 | | | |
| | | 5426 | 6.7 $\&$ 20 | 1951.7 | | | |
| | | 6794 | 87 $\&$ 7 | 582.8 | | | |
| | | 7377 | 93 $\&$ 7 | 0.0 | | | |
| 7408.6 | 1 ⁺ | 2779 | 18 $\&$ 2 | 4622 | | | |
| | | 3041 | 9 $\&$ 2 | 4360.2 | | | |
| | | 3456 | 5.5 $\&$ 20 | 3944.4 | | | |
| | | 4341 | 24 $\&$ 2 | 3059.9 | | | |
| | | 4830 | 100 $\&$ 5 | 2570.8 | | | |
| | | 5417 | 1.8 $\&$ 9 | 1983.1 | | | |
| | | 5449 | 5.5 $\&$ 20 | 1951.7 | | | |
| | | 5463 | 11 $\&$ 2 | 1937.0 | | | |
| | | 6743 | 3.6 $\&$ 9 | 657.0 | | | |
| | | 6817 | 3.6 $\&$ 9 | 582.8 | | | |
| 7408.6 | 1 ⁺ | 3048 | 100 [@] 6 | 4360.2 | M1+E2 | -0.4 [@] -I+4 | A ₂ =+0.06 2, A ₄ =-0.02 I (1978He12). |

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$^{21}\text{Ne}(p,\gamma)$ **1982Go11,1978Bi11,1977Be08 (continued)** $\gamma(^{22}\text{Na})$ (continued)

| $E_i(\text{level})$ | J_i^π | E_γ^\dagger | I_γ^\dagger | E_f | Mult. ^c | δ | Comments |
|---------------------|-------------------|--------------------|--------------------|---------|--------------------|-----------|--|
| 7408.6 | 1 ⁺ | 3464 | 58@ 6 | 3944.4 | M1+E2 | -1.3@ 9 | $A_2=+0.06$ 3, $A_4=+0.02$ 3 (1978He12). |
| | | 4348 | 90@ 6 | 3059.9 | M1(+E2) | +0.3@ 3 | $A_2=+0.03$ 4, $A_4=-0.03$ 4 (1978He12). |
| | | 5471 | 48@ 6 | 1937.0 | M1+E2 | -0.29@ 11 | $A_2=+0.02$ 3, $A_4=-0.01$ 3 (1978He12). |
| | | 6825 | 26@ 3 | 582.8 | M1+E2 | -0.19@ 10 | $A_2=+0.00$ 4, $A_4=+0.01$ 4 (1978He12). |
| 7423 | | 2249 | 28 ^b 4 | 5174 | | | |
| | | 4852 | 22 ^b 5 | 2570.8 | | | |
| | | 5211 | 10 ^b 2 | 2211.8 | | | |
| | | 5439 | 100 ^b 4 | 1983.1 | | | |
| | | 5485 | 12 ^b 2 | 1937.0 | | | |
| 7471.7 | (2 ⁺) | 2698 | 2.6& 6 | 4773.5? | | | |
| | | 3151 | 2.6& 6 | 4320 | | | |
| | | 4411 | 5.1& 13 | 3059.9 | | | |
| | | 5488 | 2.6& 8 | 1983.1 | | | |
| | | 5534 | 13@ 3 | 1937.0 | (M1+E2) | +0.2@ 2 | $A_2=+0.02$ 2, $A_4=-0.01$ 2. |
| | | 6888 | 2.6& 13 | 582.8 | | | |
| | | 7470 | 100@ 4 | 0.0 | (M1+E2) | -0.2@ 2 | $A_2=+0.005$ 9, $A_4=-0.02$ 1. |
| 7515.2 | | 2341 | 6.4& 11 | 5174 | | | |
| | | 3444 | 100& 6 | 4071.3 | | | |
| | | 5531 | 8.5& 21 | 1983.1 | | | |
| | | 5563 | 6.4& 21 | 1951.7 | | | |
| | | 6623 | 60& 4 | 890.9 | | | |
| | | 7514 | 32& 4 | 0.0 | | | |
| 7547.0 | | 3602 | 64& 4 | 3944.4 | | | |
| | | 5609 | 100& 4 | 1937.0 | | | |
| | | 6963 | 18& 4 | 582.8 | | | |
| 7573.5 | | 3502 | 100& 3 | 4071.3 | | | |
| | | 6045 | 11.5& 13 | 1527.7 | | | |
| | | 6682 | 7.7& 13 | 890.9 | | | |
| | | 7572 | 9.0& 13 | 0.0 | | | |
| 7599 | | 3239 | 19& 3 | 4360.2 | | | |
| | | 3654 | 25& 3 | 3944.4 | | | |
| | | 4539 | 34& 6 | 3059.9 | | | |
| | | 5615 | 72& 9 | 1983.1 | | | |
| | | 5647 | 31& 3 | 1951.7 | | | |
| | | 7015 | 31& 6 | 582.8 | | | |
| | | 7598 | 100& 6 | 0.0 | | | |
| 7605 | | 2431 | 15& 3 | 5174 | | | |
| | | 5392 | 4.5& 15 | 2211.8 | | | |
| | | 5621 | 8& 3 | 1983.1 | | | |
| | | 5653 | 100& 5 | 1951.7 | | | |
| | | 6947 | 20& 3 | 657.0 | | | |
| | | 7021 | 3.0& 15 | 582.8 | | | |
| | | 7603 | 1.5& 7 | 0.0 | | | |
| 7636 | | 2462 | 100& 7 | 5174 | | | |
| | | 6744 | 45& 5 | 890.9 | | | |

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$^{21}\text{Ne}(\text{p},\gamma)$ **1982Go11,1978Bi11,1977Be08 (continued)** $\gamma(^{22}\text{Na})$ (continued)

| $E_i(\text{level})$ | J_i^π | E_γ^\dagger | I_γ^\dagger | E_f | Mult. ^c | δ | Comments |
|---------------------|--------------------------------|--------------------|--------------------|--------|--------------------|-----------|---|
| 7636 | | 7635 | 34& 5 | 0.0 | | | |
| 7683 | | 2509 | 34& 4 | 5174 | | | |
| | | 3611 | 100& 4 | 4071.3 | | | |
| | | 4163 | 12& 2 | 3520 | | | |
| | | 4623 | 12& 2 | 3059.9 | | | |
| | | 6791 | 32& 4 | 890.9 | | | |
| | | 7682 | 10& 2 | 0.0 | | | |
| 7778.2 | (1,2) ⁻ | 4718 | 27& 3 | 3059.9 | | | |
| | | 5566 | 100&@ 3 | 2211.8 | D(+Q) ^d | -0.1@ 6 | A ₂ =-0.14 3, A ₄ =-0.02 3. δ: If J ^π =1 ⁻ , δ=-0.1 6. If J ^π =2 ⁻ , δ=-0.03 3. |
| | | 5826 | 42&@ 3 | 1951.7 | D(+Q) ^d | -0.05@ 10 | A ₂ =-0.12 4, A ₄ =-0.05 4. δ: If J ^π =1 ⁻ , δ=-0.05 10. If J ^π =2 ⁻ , δ=+0.1 3. |
| 7800.6 | 1 ⁺ ,2 ⁺ | 2626 | 23& 3 | 5174 | | | |
| | | 5848 | 100@ 4 | 1951.7 | D+Q ^d | -0.15@ 9 | A ₂ =+0.03 3, A ₄ =-0.04 3. δ: If J ^π =2 ⁺ , δ=-0.15 9. If J ^π =1 ⁺ , δ=+0.2 2. |
| | | 7799 | 22@ 4 | 0.0 | D+Q ^d | | A ₂ =+0.01 5, A ₄ =-0.03 5. δ: If M1, δ<+0.35. |
| 7821.1 | | 2647 | 78& 4 | 5174 | | | |
| | | 5869 | 20& 4 | 1951.7 | | | |
| | | 7163 | 100& 4 | 657.0 | | | |
| | | 7820 | 6& 2 | 0.0 | | | |
| 7889.1 | 4 ⁺ | 4920 | 4.2& 12 | 2969.0 | | | |
| | | 5905 | 29@ 4 | 1983.1 | D+Q ^d | +0.08@ 3 | A ₂ =-0.14 5, A ₄ =-0.07 5. |
| | | 6360 | 100@ 6 | 1527.7 | D+Q ^d | -0.03@ 2 | A ₂ =-0.09 3, A ₄ =-0.01 3. |
| | | 6997 | 71@ 6 | 890.9 | D(+Q) ^d | +0.01@ 2 | A ₂ =+0.40 2, A ₄ =-0.01 2. |
| | | 7888 | 4.2& 10 | 0.0 | | | |
| 7919 | 2 ⁻ | 3558 | 42& 6 | 4360.2 | | | |
| | | 5348 | 16& 6 | 2570.8 | | | |
| | | 5706 | 19& 6 | 2211.8 | | | |
| | | 5935 | 61& 6 | 1983.1 | | | |
| | | 5981 | 84& 10 | 1937.0 | | | |
| | | 7917 | 100& 10 | 0.0 | | | |
| 7965 | | 3645 | 15& 3 | 4320 | | | |
| | | 4020 | 30& 3 | 3944.4 | | | |
| | | 6027 | 100& 3 | 1937.0 | | | |
| | | 7381 | 20& 3 | 582.8 | | | |
| 7977 | | 5405 | 50& 6 | 2570.8 | | | |
| | | 5764 | 68& 6 | 2211.8 | | | |
| | | 6024 | 15& 6 | 1951.7 | | | |
| | | 6039 | 15& 6 | 1937.0 | | | |
| | | 7319 | 29& 6 | 657.0 | | | |
| | | 7393 | 100& 6 | 582.8 | | | |
| | | 7975 | 18& 9 | 0.0 | | | |
| 8018 | | 3946 | 49& 12 | 4071.3 | | | |
| | | 4311 | 42& 16 | 3706.7 | | | |

Continued on next page (footnotes at end of table)

$^{21}\text{Ne}(p,\gamma)$ **1982Go11,1978Bi11,1977Be08 (continued)** $\gamma(^{22}\text{Na})$ (continued)

| $E_i(\text{level})$ | E_γ^\dagger | I_γ^\dagger | E_f | Comments |
|---------------------|--------------------|--------------------|---------|-------------------------------|
| 8018 | 7126 | 100& 21 | 890.9 | |
| | 8016 | 42& 16 | 0.0 | |
| 8041 | 3267 | 4.8& 12 | 4773.5? | |
| | 3680 | 4.8& 12 | 4360.2 | |
| | 4521 | 6.0& 12 | 3520 | |
| | 5071 | 2.4& 6 | 2969.0 | |
| | 7149 | 1.2& 6 | 890.9 | |
| | 8039 | 100& 4 | 0.0 | |
| 8101 | 3740 | 3.6& 11 | 4360.2 | |
| | 5040 | 7.1& 18 | 3059.9 | |
| | 6148 | 57& 5 | 1951.7 | |
| | 7443 | 100& 5 | 657.0 | |
| | 7517 | 7.1& 18 | 582.8 | |
| | 8099 | 3.6& 11 | 0.0 | |
| 8108 | 2666 | 59& 5 | 5442 | |
| | 4587 | 69& 5 | 3520 | |
| | 6579 | 100& 5 | 1527.7 | |
| | 7216 | 5.1& 25 | 890.9 | |
| | 8106 | 23& 3 | 0.0 | |
| 8114 | 5053 | 100& 11 | 3059.9 | |
| | 6161 | 15& 9 | 1951.7 | |
| | 7222 | 57& 11 | 890.9 | |
| | 8112 | 46& 9 | 0.0 | |
| 8165 | 3804 | 34& 11 | 4360.2 | |
| | 5104 | 16& 9 | 3059.9 | |
| | 6212 | 34& 11 | 1951.7 | |
| | 7273 | 100& 11 | 890.9 | |
| | 8163 | 43& 11 | 0.0 | |
| 8197 | 4125 | 35& 8 | 4071.3 | |
| | 6244 | 47& 12 | 1951.7 | |
| | 6259 | 14& 12 | 1937.0 | |
| | 8195 | 100& 10 | 0.0 | |
| 8211 | 3037 | 73& 8 | 5174 | |
| | 6258 | 100& 8 | 1951.7 | |
| | 8209 | 100& 8 | 0.0 | |
| 8234 | 3651 | 7.3& 18 | 4583 | |
| | 3873 | 10.9& 18 | 4360.2 | |
| | 5173 | 18& 4 | 3059.9 | |
| | 6281 | 16& 4 | 1951.7 | |
| | 7650 | 22@ 4 | 582.8 | $A_2=+0.02$ 5, $A_4=+0.03$ 5. |
| | 8232 | 100@ 5 | 0.0 | $A_2=0.00$ 4, $A_4=0.00$ 4. |
| 8436 | 4075 | 11 ^a | 4360.2 | |
| | 4915 | 50 ^a | 3520 | |
| | 5375 | 16 ^a | 3059.9 | |
| | 6223 | 42 ^a | 2211.8 | |

Continued on next page (footnotes at end of table)

$^{21}\text{Ne}(\text{p},\gamma)$ **1982Go11,1978Bi11,1977Be08 (continued)** $\gamma(^{22}\text{Na})$ (continued)

| $E_i(\text{level})$ | E_γ^\dagger | I_γ^\dagger | E_f | Comments |
|---------------------|--------------------|--------------------|--------|---------------------------------|
| 8436 | 6498 | 3 ^a | 1937.0 | |
| | 7852 | 100 ^a | 582.8 | |
| | 8434 | 45 ^a | 0.0 | |
| 8496 | 4135 | 1 ^a | 4360.2 | |
| | 5435 | 1 ^a | 3059.9 | |
| | 8494 | 100 [@] | 0.0 | $A_2=+0.04 \ 3, A_4=+0.04 \ 3.$ |
| 8675 | 4603 | 9 ^a | 4071.3 | |
| | 5614 | 2 ^a | 3059.9 | |
| | 6462 | 100 ^a | 2211.8 | |
| | 7783 | 38 ^a | 890.9 | |
| | 8091 | 23 ^a | 582.8 | |
| | 8673 | 19 ^a | 0.0 | |

[†] From [1982Go11](#), except as noted. γ -ray energies without uncertainty were calculated from level energy difference, recoil energy subtracted.

[‡] From [1978Bi11](#).

[#] From [1992Be35](#).

[@] From [1978He12](#).

[&] From [1977Be08](#).

^a From [1977Ke04](#).

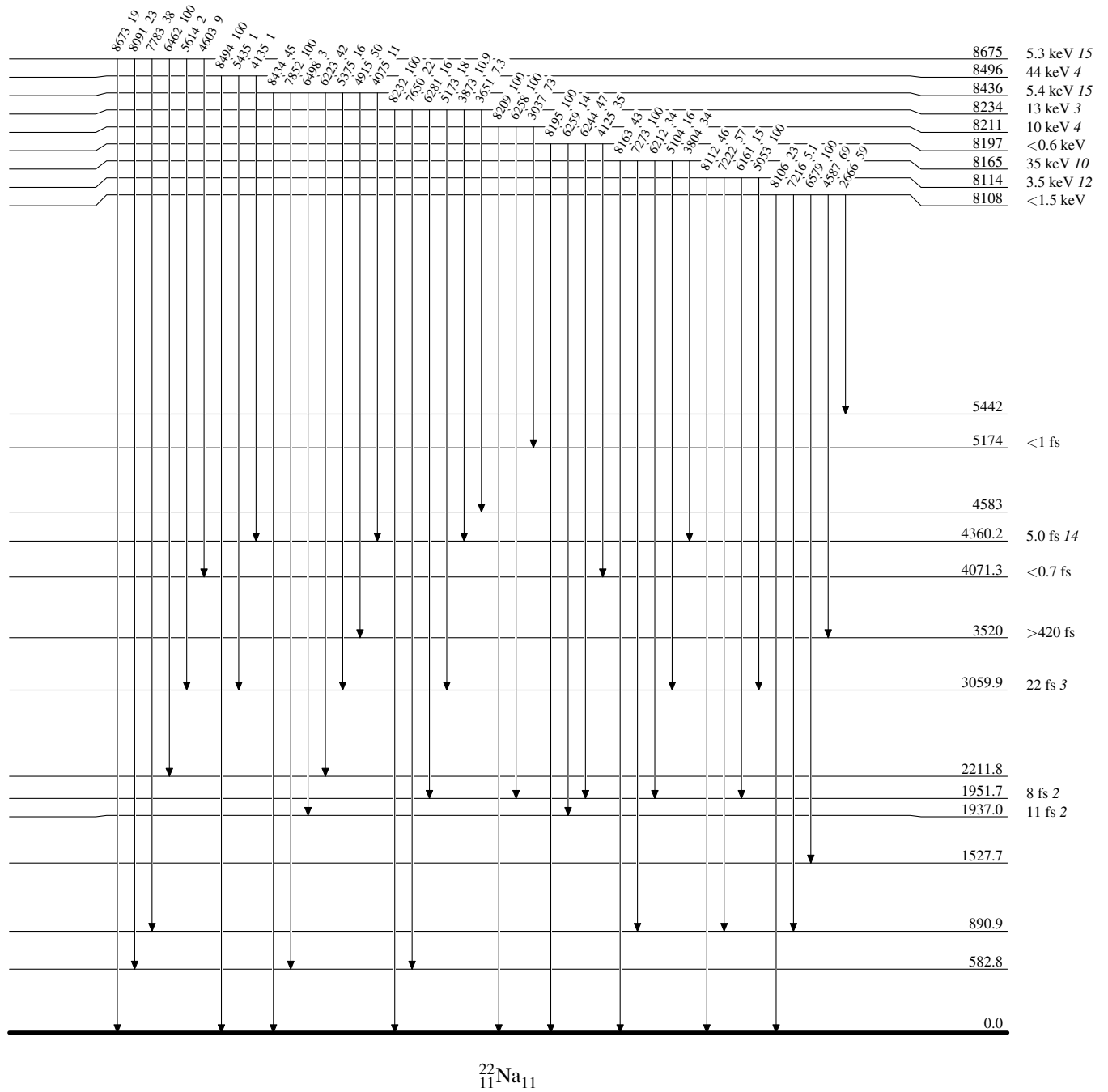
^b From [1983Go21](#).

^c From Adopted Gammas, except otherwise noted.

^d From angular distribution coefficients.

$^{21}\text{Ne}(p,\gamma)$ 1982Go11,1978Bi11,1977Be08Level Scheme

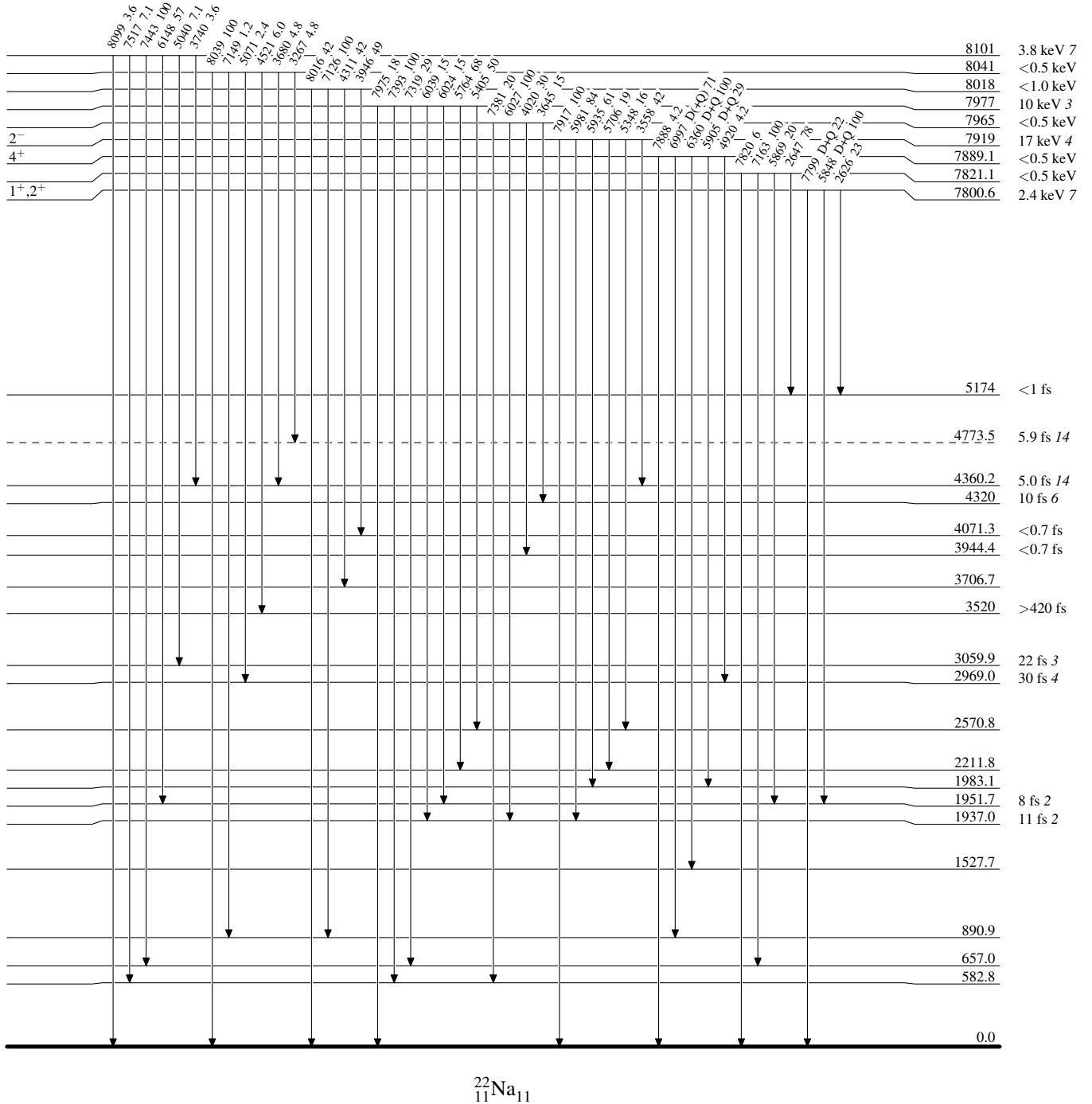
Intensities: Relative photon branching from each level

 $^{22}_{11}\text{Na}_{11}$

$^{21}\text{Ne}(p,\gamma)$ 1982Go11,1978Bi11,1977Be08

Level Scheme (continued)

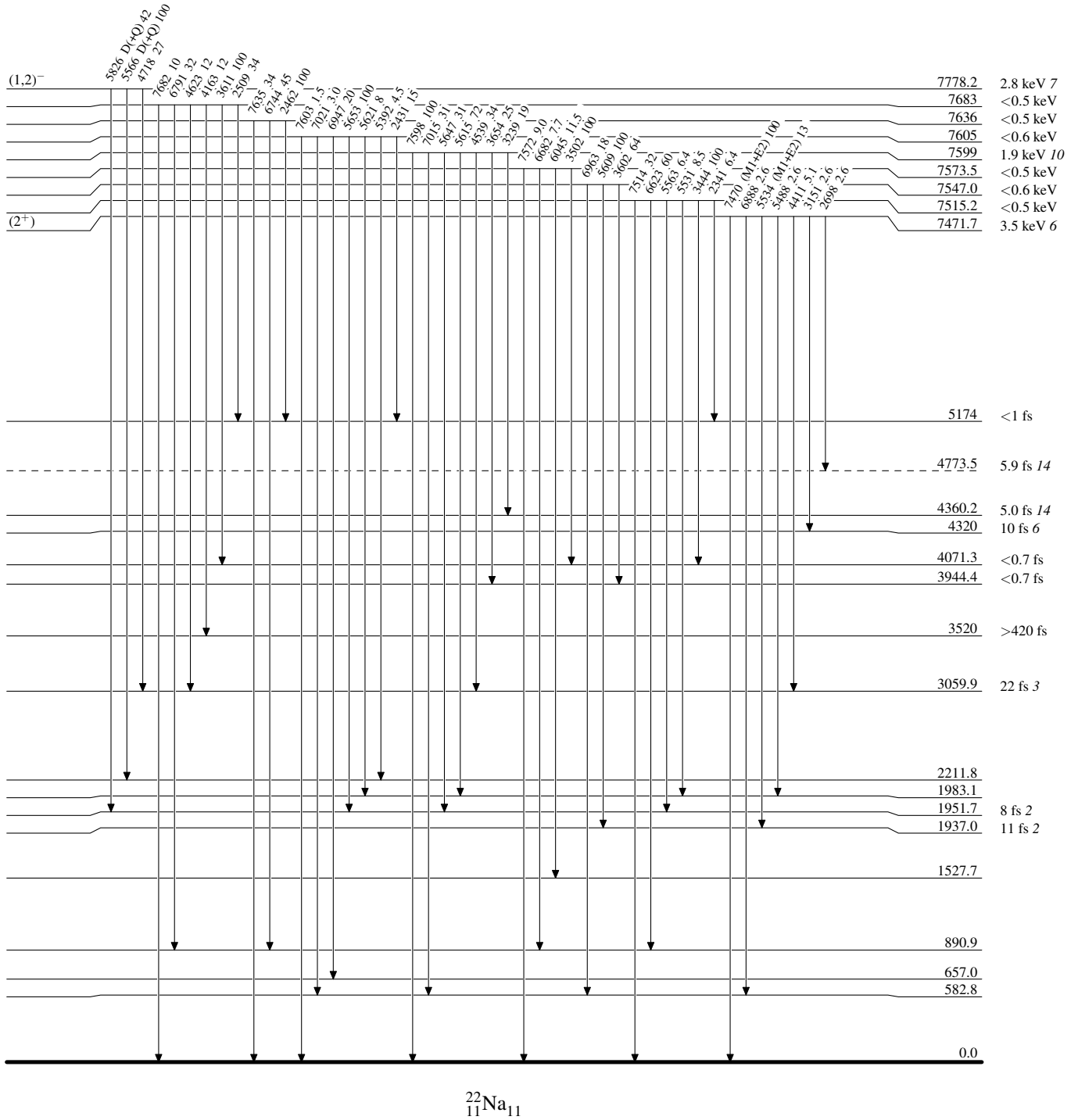
Intensities: Relative photon branching from each level

 $^{22}_{11}\text{Na}_{11}$

$^{21}\text{Ne}(p,\gamma)$ 1982Go11,1978Bi11,1977Be08

Level Scheme (continued)

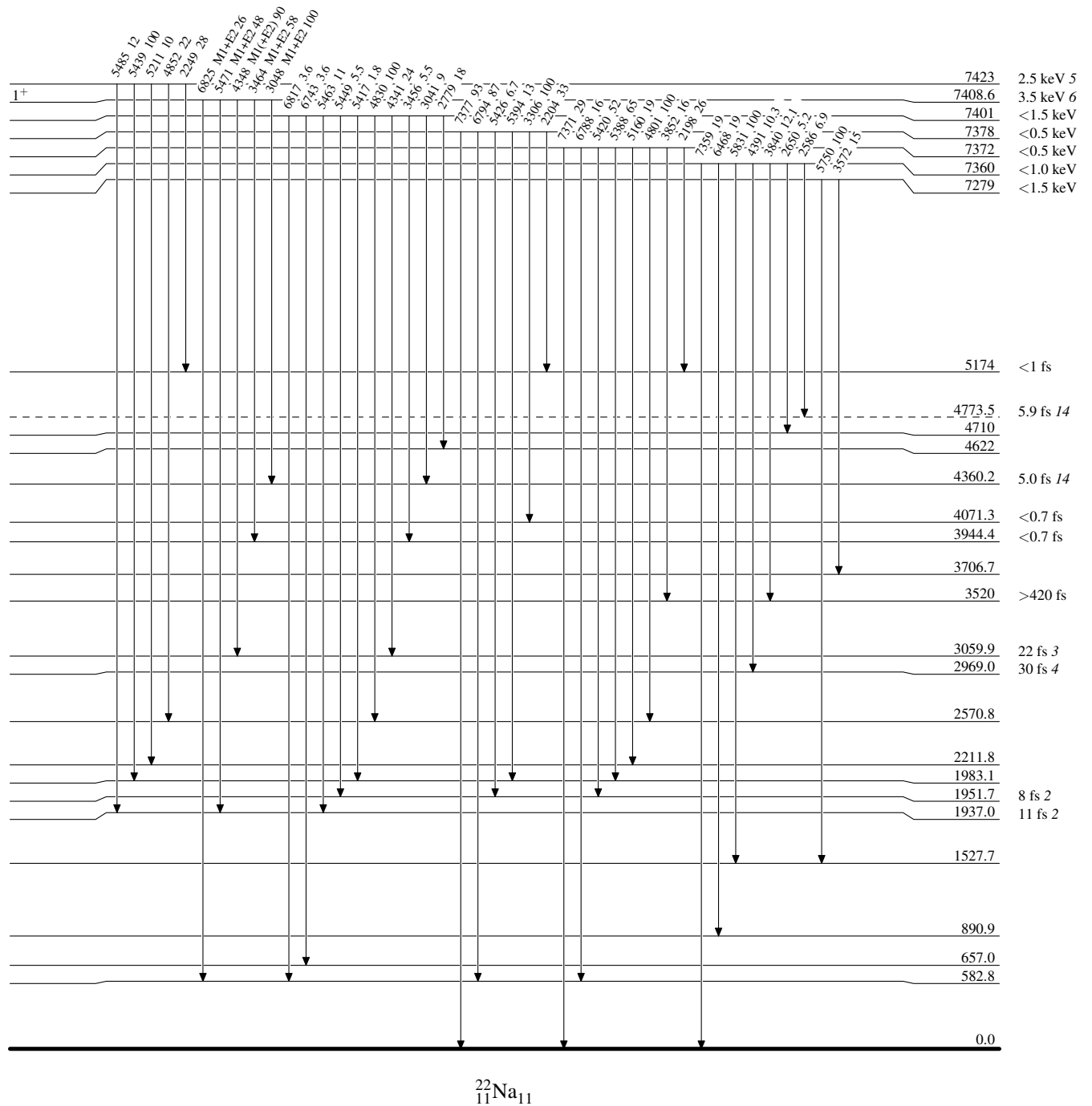
Intensities: Relative photon branching from each level

 $^{22}_{11}\text{Na}_{11}$

$^{21}\text{Ne}(p,\gamma)$ 1982Go11,1978Bi11,1977Be08

Level Scheme (continued)

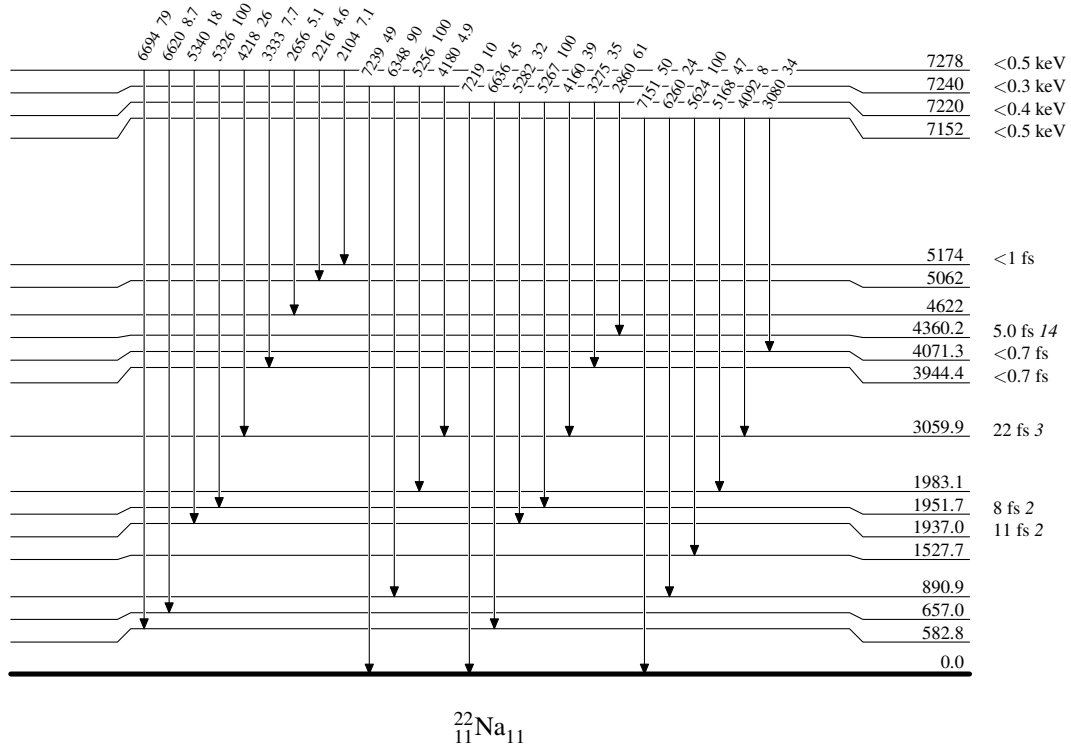
Intensities: Relative photon branching from each level



$^{21}\text{Ne}(p,\gamma)$ 1982Go11,1978Bi11,1977Be08

Level Scheme (continued)

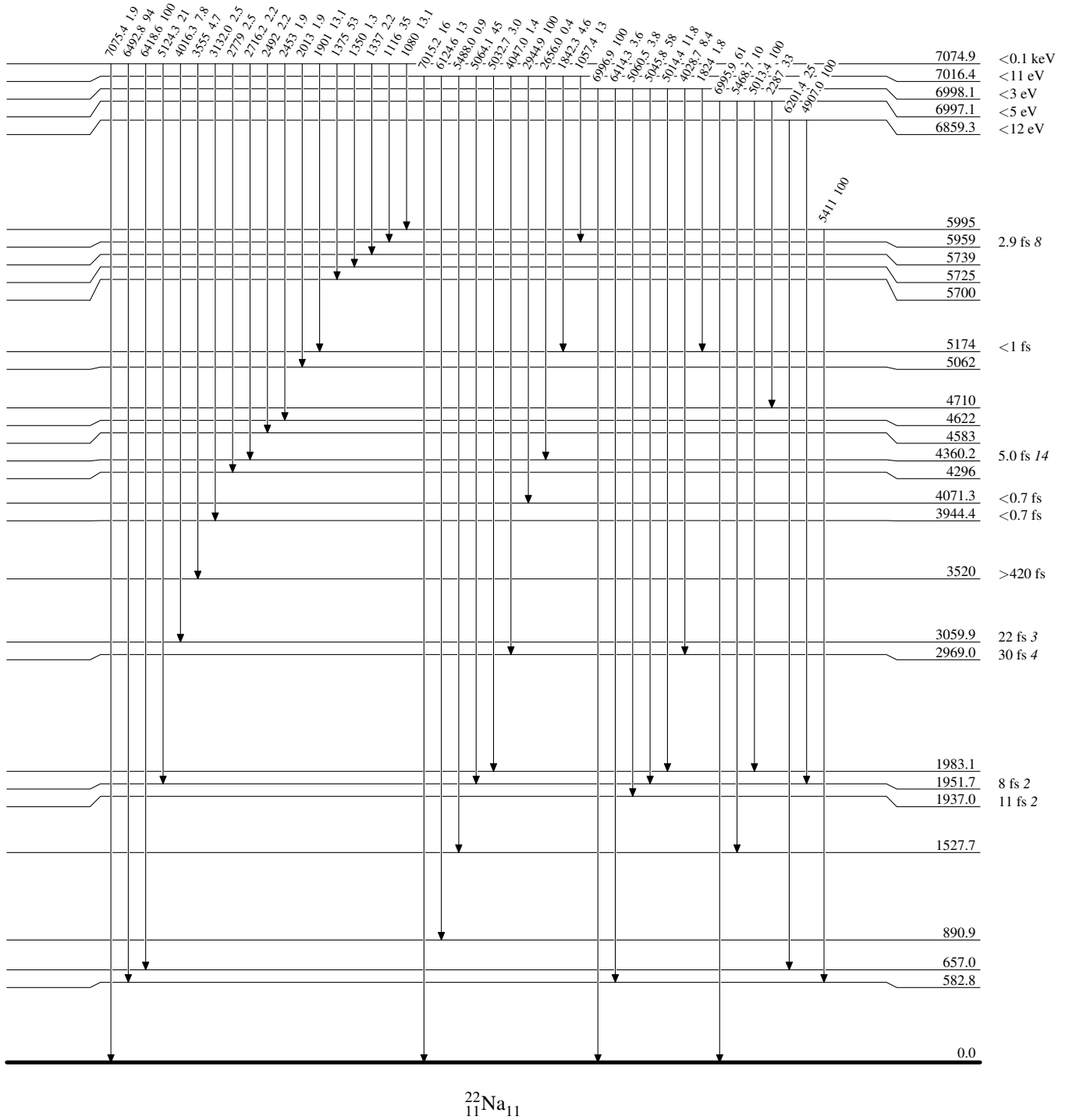
Intensities: Relative photon branching from each level



$^{21}\text{Ne}(p,\gamma)$ 1982Go11,1978Bi11,1977Be08

Level Scheme (continued)

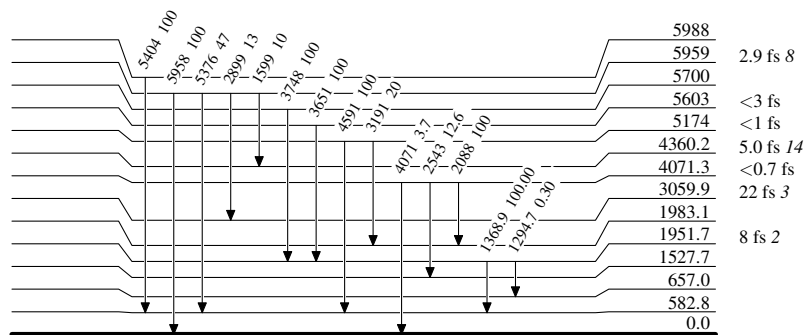
Intensities: Relative photon branching from each level



${}^{21}\text{Ne}(p,\gamma)$ 1982Go11,1978Bi11,1977Be08

Level Scheme (continued)

Intensities: Relative photon branching from each level

 ${}^{22}_{11}\text{Na}_{11}$