

Adopted Levels, Gammas

| Type | Author | History Citation | Literature Cutoff Date |
|-----------------|-----------------|-------------------|------------------------|
| Full Evaluation | R. B. Firestone | NDS 127, 1 (2015) | 15-Jan-2015 |

Q(β^-)=-13098 16; S(n)=17106.6 11; S(p)=2431.68 28; Q(α)=-6561.3 4 2012Wa38

²¹Na Levels

Cross Reference (XREF) Flags

| | | |
|--|--|---|
| A ²⁰ Ne(p,p),(pol p,p) | F ²⁰ Ne(d,n),(d,n γ) | K ¹⁶ O(⁷ Li,2n γ) |
| B ²³ Na(p,t) | G ²⁰ Ne(³ He,d γ),(³ He,d) | L ²⁰ Ne(³ He,d) E=25.83 MeV |
| C ¹⁹ F(³ He,n) | H ²² Al ϵ p decay:91.1 ms | M ⁹ Be(²⁰ Ne, ²¹ Na γ) |
| D ²¹ Mg β^+ decay | I ²³ Si ϵ 2p decay | N Coulomb excitation |
| E ²⁰ Ne(p, γ) | J ²⁴ Mg(p, α),(p, α γ) | O Si(p,X),C(p,X):Q |

| E(level) | J $^\pi$ | T _{1/2} | XREF | Comments |
|------------------------|----------------------------|------------------|-----------------|--|
| 0.0 [†] | 3/2 ⁺ | 22.49 s 4 | ABCDEFGHIJKLMNO | % ϵ +% β^+ =100 μ =+2.38630 10; Q=+0.124 14 T _{1/2} : Weighted average of 22.55 s 10 (1974A103), 22.48 s 4 (1977Az01). J $^\pi$: From magnetic moment. Mirror of ²¹ Ne ground state. μ ,Q: From 2011StZZ. |
| 331.90 [†] 10 | 5/2 ⁺ | 7.08 ps 8 | B DEFGHIJKLMNO | μ =3.7 3 B(E2) \uparrow =0.016 3 μ ,Q: From 2011StZZ. B(E2) \uparrow : Weighted average of discrepant values 0.0205 14 (2008Sc18) and 0.0137 9 (2009Sc28) with external error. T _{1/2} : From ² H(²⁰ Ne,n) (1978Ro10). Other values: 10 ps 2 (1968Ba12), 6.9 ps 3 (1977Be30). J $^\pi$: log ft=4.79 from 5/2 ⁺ , ²⁰ Ne(p, γ) angular correlation. Mirror of 350.7 keV, 5/2 ⁺ level in ²¹ Ne. |
| 1716.1 [†] 3 | 7/2 ⁺ | 37 fs 8 | B DEF H JKLM | μ ,Q: From time differential perturbed angular correlation (TDPAC) measurement (1977Be30). J $^\pi$: log ft=5.11 from 5/2 ⁺ and ²⁴ Mg(α ,p) α -p ₀ angular correlations. Mirror of 1745.9 keV, 7/2 ⁺ level in ²¹ Ne. |
| 2423.8 4 | 1/2 ⁺ | 1.7 fs 4 | B EF J LM | J $^\pi$: L=0 in ²⁰ Na(d,n), mirror of 2794.1 keV 1/2 ⁺ in ²¹ Ne. |
| 2797.9 5 | 1/2 ⁻ | 13 fs 4 | B EF J | J $^\pi$: ²⁴ Mg(α ,p) α -p ₀ angular correlation, l=1 in ²⁰ Na(d,n). Mirror of 2788.8 keV 1/2 ⁻ in ²¹ Ne. |
| 2829.1 [†] 7 | 9/2 ⁺ | | E JK | J $^\pi$: ²⁴ Mg(α ,p) α -p ₀ angular correlation. Mirror of 2866.8 keV 9/2 ⁺ in ²¹ Ne. |
| 3544.3 4 | 5/2 ⁺ | 15.5 eV 14 | AB DEFG J | J $^\pi$: ²⁴ Mg(α ,p) α -p ₀ angular correlation, and (p, γ) angular correlation. M1+E2 to 3/2 ⁺ . |
| 3678.9 4 | 3/2 ⁻ | 193 eV 13 | AB EFG J | J $^\pi$: From (p,p). |
| 3862.2 5 | 5/2 ⁻ | 2.6 eV 3 | AB EFG J | J $^\pi$: 5/2 ⁻ or 7/2 ⁻ from (p,p), 7/2 ⁻ excluded by (p, γ). |
| 4169.6 7 | 3/2 ⁻ | 180 keV 15 | A EFG J | J $^\pi$: From (p,p). |
| 4294.3 6 | 5/2 ⁺ | 3.93 keV 10 | AB DEFG J M | J $^\pi$: From (p,p). |
| 4419 [†] 2 | (11/2 ⁺) | | B D FGH JK | J $^\pi$: Member of g.s. band. |
| 4467.9 7 | 3/2 ⁺ | 21 keV 3 | A | J $^\pi$: From (p,p). |
| 4984 8 | 1/2 ⁻ | 200 keV | A J | J $^\pi$: From (p,p). |
| 5020 9 | (3/2,5/2,7/2) ⁺ | | D F | J $^\pi$: log ft=4.48 from 5/2 ⁺ . |
| 5380 9 | (3/2,5/2,7/2) ⁺ | | D | J $^\pi$: log ft=4.95 from 5/2 ⁺ . |
| 5457 1 | 1/2 ⁺ | 110 keV | A E | J $^\pi$: From (p,p). |
| 5770 20 | (3/2,5/2,7/2) ⁺ | ≈20 keV | B D | J $^\pi$: log ft=4.86 from 5/2 ⁺ . |
| 5815 1 | 7/2 ⁻ | ≈0.4 keV | A | J $^\pi$: From (p,p). |

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{21}Na Levels (continued)

| E(level) | J^π | $T_{1/2}$ | XREF | | Comments |
|----------|-------------------|------------|------|---|---|
| 5828 1 | $3/2^-$ | 25 keV | A | | J^π : From (p,p). |
| 5884 20 | $(3/2,5/2,7/2)^+$ | | D | H | J^π : $\log ft=5.59$ from $5/2^+$. |
| 5979 15 | $(3/2,5/2,7/2)^+$ | | D | | J^π : $\log ft=5.30$ from $5/2^+$. |
| 6070 20 | $(5/2,7/2)^-$ | 5 keV | AB D | H | J^π : From (p,p), $\log ft=5.38$ from $5/2^+$. |
| 6165 30 | $(3/2,5/2,7/2)^+$ | | D | | J^π : $\log ft=5.84$ from $5/2^+$. |
| 6341 20 | $(3/2,5/2,7/2)^+$ | | D | H | J^π : $\log ft=4.99$ from $5/2^+$. |
| 6468 20 | $3/2^+$ | 145 keV 15 | AB D | | J^π : From (p,p). |
| 6879 15 | $3/2^-$ | 22 keV 7 | A | | J^π : From (p,p). |
| 6992 15 | $7/2^-$ | 35 keV 9 | AB | | J^π : From (p,p). |
| 7253 15 | $1/2^+$ | 220 keV 20 | A | | J^π : From (p,p). |
| 7571 15 | $3/2^-$ | 116 keV 12 | AB | | J^π : From (p,p). |
| 7575 15 | $1/2^-$ | 128 keV 20 | AB | | J^π : From (p,p). |
| 7609? 15 | $3/2^+$ | 112 keV 20 | A | | J^π : From (p,p). |
| 7930 15 | $5/2^-$ | 28 keV 11 | A | | J^π : From (p,p). |
| 7946 15 | $7/2^-$ | 25 keV 9 | A | | J^π : From (p,p). |
| 7960 15 | $1/2^-$ | 58 keV 7 | A | | J^π : From (p,p). |
| 8097 15 | $3/2^-$ | 25 keV 9 | AB | | J^π : From (p,p). |
| 8135 15 | $5/2^+$ | 32 keV 9 | A | | J^π : From (p,p). |
| 8303 13 | $(3/2,5/2,7/2)^+$ | | B D | | J^π : $\log ft=4.60$ from $5/2^+$. |
| 8388 15 | $1/2^+$ | 21 keV 8 | A | | J^π : From (p,p). |
| 8397 15 | $3/2^+$ | 30 keV 13 | A D | | J^π : From (p,p). |
| 8464 15 | $3/2^+$ | 25 keV 9 | A | | J^π : From (p,p). |
| 8554 15 | $1/2^+$ | 100 keV 8 | A | | J^π : From (p,p). |
| 8562? 15 | $3/2^+$ | <20 keV | A | | J^π : From (p,p). |
| 8595 15 | $5/2^+$ | 138 keV 15 | A | | J^π : From (p,p). |
| 8624 15 | $1/2^-$ | 92 keV 10 | A | | J^π : From (p,p). |
| 8715 15 | $3/2^+$ | 360 keV 25 | A | | J^π : From (p,p). |
| 8738 15 | $3/2^-$ | 110 keV 18 | A | | J^π : From (p,p). |
| 8742 15 | $1/2^+$ | 98 keV 25 | A | | J^π : From (p,p). |
| 8827 15 | $5/2^+$ | 138 keV 16 | A D | | J^π : From (p,p). |
| 8960 15 | $1/2^+$ | 25 keV 6 | AB D | | J^π : From (p,p). |
| 8976 2 | $5/2^+$ | 650 eV 50 | A CD | | $T=3/2$ J^π : From (p,p). |
| 8981 15 | $5/2^+$ | 23 keV 16 | A C | | J^π : From (p,p). |
| 9051 15 | $7/2^-$ | 36 keV 11 | A | | J^π : From (p,p). |
| 9155 15 | $3/2^+$ | 34 keV 13 | AB | | J^π : From (p,p). |
| 9217 2 | $1/2^+$ | 2.8 keV 35 | A C | | $T=3/2$ J^π : From (p,p). |
| 9280 30 | $(3/2,5/2,7/2)$ | | D | | J^π : $\log ft=5.4$ from $5/2^+$. |
| 9348 15 | $1/2^+$ | 23 keV 9 | A | | J^π : From (p,p). |
| 9563 15 | $7/2^-$ | 63 keV 15 | A | | J^π : From (p,p). |
| 9725 25 | $3/2^+$ | 256 keV 20 | A | | J^π : From (p,p). |
| 9775 15 | $1/2^-$ | 56 keV 11 | A | | J^π : From (p,p). |
| 9779 15 | $7/2^-$ | 41 keV 9 | A | | J^π : From (p,p). |
| 9808 15 | $3/2^-$ | 80 keV 16 | A | | J^π : From (p,p). |
| 10050 40 | | | B | L | |

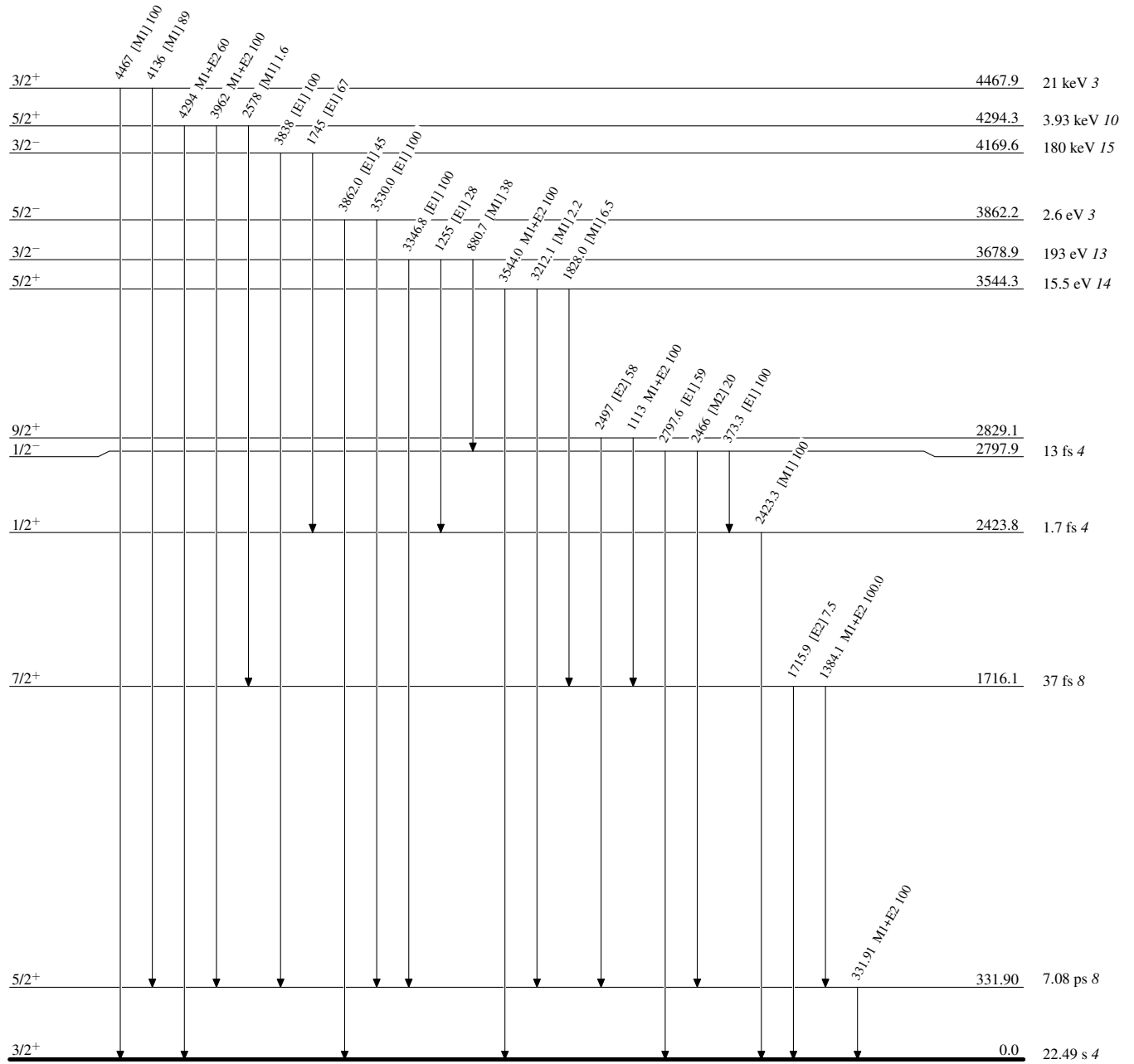
† Band(A): g.s. band.

Adopted Levels, Gammas (continued)

| $\gamma(^{21}\text{Na})$ | | | | | | | | |
|--------------------------|------------------|----------------------------------|-------------------------|----------------------------|--|------------------------|--------------------|--|
| $E_i(\text{level})$ | J_i^π | E_γ | I_γ | E_f | J_f^π | Mult. | δ | Comments |
| 331.90 | 5/2 ⁺ | 331.91 10 | 100 | 0.0 | 3/2 ⁺ | M1+E2 | +0.083 3 | B(M1) \downarrow =0.1513 17 B(M1)(W.u.)=0.0845 10; B(E2)(W.u.)=39 3 |
| 1716.1 | 7/2 ⁺ | 1384.1 3 1715.9 7 | 100.0 22 7.5 22 | 331.90 0.0 | 5/2 ⁺ 3/2 ⁺ | M1+E2 [E2] | +0.14 3 | B(M1)(W.u.)=0.20 5; B(E2)(W.u.)=16 8 B(E2)(W.u.)=21 8 |
| 2423.8 | 1/2 ⁺ | 2423.3 5 | 100 | 0.0 | 3/2 ⁺ | [M1] | | B(M1)(W.u.)=0.91 22 |
| 2797.9 | 1/2 ⁻ | 373.3 2466 2797.6 14 | 100 7 20 4 59 7 | 2423.8 331.90 0.0 | 1/2 ⁺ 5/2 ⁺ 3/2 ⁺ | [E1] [M2] [E1] | | B(E1)(W.u.)=0.73 24 B(M2)(W.u.)=3.8 \times 10 ² 15 B(E1)(W.u.)=0.0010 4 |
| 2829.1 | 9/2 ⁺ | 1113 2497 | 100 8 58 8 | 1716.1 331.90 | 7/2 ⁺ 5/2 ⁺ | M1+E2 [E2] | +0.12 3 | |
| 3544.3 | 5/2 ⁺ | 1828.0 9 3212.1 6 3544.0 6 | 6.5 5 2.2 5 100 3 | 1716.1 331.90 0.0 | 7/2 ⁺ 5/2 ⁺ 3/2 ⁺ | [M1] [M1] M1+E2 | +0.07 2 | B(M1)(W.u.)=15.39 5; B(E2)(W.u.)=40 30 |
| 3678.9 | 3/2 ⁻ | 880.7 5 1255 1 3346.8 4 | 38 3 28 3 100 5 | 2797.9 2423.8 331.90 | 1/2 ⁻ 1/2 ⁺ 5/2 ⁺ | [M1] [E1] [E1] | | |
| 3862.2 | 5/2 ⁻ | 3530.0 5 3862.0 10 | 100 8 45 8 | 331.90 0.0 | 5/2 ⁺ 3/2 ⁺ | [E1] [E1] | | |
| 4169.6 | 3/2 ⁻ | 1745 3838 | 67 5 100 5 | 2423.8 331.90 | 1/2 ⁺ 5/2 ⁺ | [E1] [E1] | | |
| 4294.3 | 5/2 ⁺ | 2578 3962 4294 | 1.6 5 100 5 60 5 | 1716.1 331.90 0.0 | 7/2 ⁺ 5/2 ⁺ 3/2 ⁺ | [M1] M1+E2 M1+E2 | -0.09 7 +0.20 5 | |
| 4467.9 | 3/2 ⁺ | 4136 4467 | 89 15 100 15 | 331.90 0.0 | 5/2 ⁺ 3/2 ⁺ | [M1] [M1] | | |

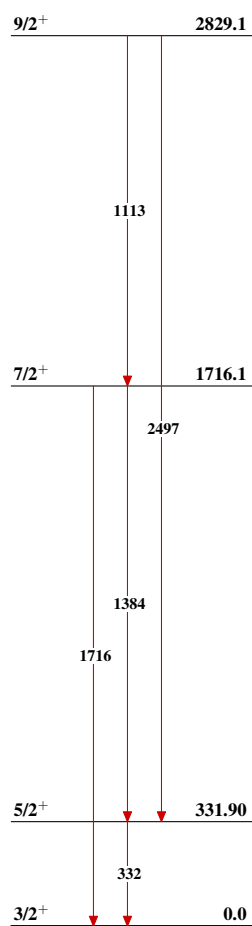
Adopted Levels, Gammas**Level Scheme**

Intensities: Relative photon branching from each level

 $^{21}_{11}\text{Na}_{10}$

Adopted Levels, Gammas

Band(A): g.s. band

(11/2⁺) 4419 ${}^{21}_{11}\text{Na}_{10}$