

<sup>20</sup>Ne(p,γ) 1972Du16,1975Ro08,1969An14

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

1972Du16: <sup>20</sup>Ne(p,γ), E=1169,1311,1504 keV E<sub>γ</sub>, I<sub>γ</sub>, γγ-coin, DSA.

1975Ro08: <sup>22</sup>Ne(p,γ), E=0.37-2.10 MeV, measured σ(E,E<sub>γ</sub>,θ). Natural Ne gas target, Ne implanted target.

1969An14: <sup>20</sup>Ne(p,γ), E=1169 keV, measured Doppler shift attenuation.

Other references: 1975An14, 1977An17, 1964Va10.

<sup>21</sup>Na Levels

| E(level) <sup>†</sup> | J <sup>π</sup> # | T <sub>1/2</sub> | S <sup>‡</sup> | Comments  |
|-----------------------|------------------|------------------|----------------|---|
| 0                     |                  |                  | <0.04          |   |
| 332.4 4               | 5/2 <sup>+</sup> |                  | 0.77 13        |   |
| 1716.1 4              |                  | 37 fs 8          | <0.3           | T <sub>1/2</sub> : Weighted average of 31 fs 10 (1969An14), and 41 fs 8 (1975An14).<br>Uncertainty increased by evaluator. Other: 8 fs 2 (1972Du16).<br>J <sup>π</sup> : Not 7/2 <sup>-</sup> . |
| 2423.5 4              |                  | 1.7 fs 4         | 0.90 12        | T <sub>1/2</sub> : Weighted average of 1.5 fs 3 (1975Ro08), and 2.7 fs 8 (1977An17).<br>Other: <0.7 fs (1972Du16).  |
| 2798.4 5              |                  | 13 fs 4          | <0.05          | T <sub>1/2</sub> : From 1989Bi07.   |
| 2829.3 8              |                  |                  |                |   |
| 3544.3 4              | 5/2 <sup>+</sup> | 15.5 eV 14       |                |   |
| 3679.3 4              |                  | 193 eV 13        |                |   |
| 3862.6 5              |                  | 2.6 eV 3         |                | J <sup>π</sup> : Not 7/2 <sup>-</sup> .   |
| 4175 15               |                  | 180 keV 15       |                | E(level): From 1975Ro08.  |
| 4295 2                | 5/2              |                  |                | E(level): From 1975Ro08.  |

<sup>†</sup> From least-squares fit of gamma energies to level scheme.

<sup>‡</sup> From 1975Ro08.

# From angular correlations of 1965Va10 and transition strengths.

γ(<sup>21</sup>Na)

| E <sub>γ</sub> | I <sub>γ</sub> <sup>†</sup> | E <sub>i</sub> (level) | J <sub>i</sub> <sup>π</sup> | E <sub>f</sub> | J <sub>f</sub> <sup>π</sup> | Mult. | δ <sup>‡</sup> | Comments   |
|----------------|-----------------------------|------------------------|-----------------------------|----------------|-----------------------------|-------|----------------|--|
| 332.2 6        | 100                         | 332.4                  | 5/2 <sup>+</sup>            | 0              |                             |       |                | E <sub>γ</sub> : Weighted average of 332.4 8 (1972Du16), and 332.0 10 (1975Ro08).  |
| 375            | 100 7                       | 2798.4                 |                             | 2423.5         |                             |       |                | E <sub>γ</sub> : From 1972Du16.  |
| 880.7 5        | 38 3                        | 3679.3                 |                             | 2798.4         |                             |       |                | E <sub>γ</sub> : From 1972Du16.  |
| 1113           | 100 13                      | 2829.3                 |                             | 1716.1         |                             |       |                | E <sub>γ</sub> : From 1972Du16.  |
| 1255 1         | 28 3                        | 3679.3                 |                             | 2423.5         |                             |       |                | E <sub>γ</sub> : From 1972Du16.  |
| 1383.6 2       | 100                         | 1716.1                 |                             | 332.4          | 5/2 <sup>+</sup>            |       |                | E <sub>γ</sub> : Weighted average of 1383.5 2 (1972Du16), and 1384.3 8 (1975Ro08). |
| 1752           | 89 17                       | 4175                   |                             | 2423.5         |                             |       |                |  |
| 1828.1 3       | 6.5 5                       | 3544.3                 | 5/2 <sup>+</sup>            | 1716.1         |                             |       |                | E <sub>γ</sub> : From 1972Du16.  |
| 2423.3 5       | 100                         | 2423.5                 |                             | 0              |                             |       |                | E <sub>γ</sub> : From 1972Du16.  |
| 2465           | 20 4                        | 2798.4                 |                             | 332.4          | 5/2 <sup>+</sup>            |       |                |  |
| 2497           | 67 13                       | 2829.3                 |                             | 332.4          | 5/2 <sup>+</sup>            |       |                |  |
| 2579           | 1.6 5                       | 4295                   | 5/2                         | 1716.1         |                             |       |                |  |
| 2797.6 14      | 59 7                        | 2798.4                 |                             | 0              |                             |       |                | E <sub>γ</sub> : From 1975Ro08.  |
| 3212.0 10      | 2.2 5                       | 3544.3                 | 5/2 <sup>+</sup>            | 332.4          | 5/2 <sup>+</sup>            |       |                | E <sub>γ</sub> : From 1975Ro08.  |
| 3346.8 4       | 100 10                      | 3679.3                 |                             | 332.4          | 5/2 <sup>+</sup>            |       |                | E <sub>γ</sub> : From 1972Du16.  |
| 3530.0 5       | 100 10                      | 3862.6                 |                             | 332.4          | 5/2 <sup>+</sup>            |       |                | E <sub>γ</sub> : From 1972Du16.  |
| 3544.0 6       | 100 3                       | 3544.3                 | 5/2 <sup>+</sup>            | 0              |                             | M1+E2 | +0.07 2        | E <sub>γ</sub> : Weighted average of 3543.6 4 (1972Du16), and 3544.8 6 (1975Ro08). |

Continued on next page (footnotes at end of table)

${}^{20}\text{Ne}(\text{p},\gamma)$  **1972Du16,1975Ro08,1969An14** (continued) $\gamma({}^{21}\text{Na})$  (continued)

| $E_\gamma$ | $I_\gamma^\dagger$ | $E_i(\text{level})$ | $J_i^\pi$ | $E_f$ | $J_f^\pi$        | Mult. | $\delta^\ddagger$ | Comments  |
|------------|--------------------|---------------------|-----------|-------|------------------|-------|-------------------|---|
| 3680.6 12  | <6                 | 3679.3              |           | 0     |                  |       |                   | $E_\gamma$ : Weighted average of 3680.2 (1972Du16), and 3681.0 15 (1975Ro08). |
| 3842       | 100 17             | 4175                |           | 332.4 | 5/2 <sup>+</sup> |       |                   | $E_\gamma$ : From 1972Du16.   |
| 3862.0 10  | 45 8               | 3862.6              |           | 0     |                  |       |                   |   |
| 3963       | 100 5              | 4295                | 5/2       | 332.4 | 5/2 <sup>+</sup> | M1+E2 | -0.09 7           |   |
| 4295       | 60 5               | 4295                | 5/2       | 0     |                  | M1+E2 | +0.20 5           |   |

<sup>†</sup> From 1972Ha56 and 1975Ro08.

<sup>‡</sup> From 1964Va10.

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## Level Scheme

Intensities: Type not specified

## Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

