

<sup>121</sup>Sb( $\alpha,2n\gamma$ ) 1993Go04,1977Ha36

| Type            | Author   | History Citation  | Literature Cutoff Date |
|-----------------|----------|-------------------|------------------------|
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**1993Go04:** E=30 MeV alpha beam was produced from the Variable-Energy Cyclotron Centre, Calcutta. Target was  $\approx 3$  mg/cm<sup>2</sup> enriched <sup>121</sup>Sb.  $\gamma$  rays were detected with two HPGe detectors. Measured E $\gamma$ , I $\gamma$ ,  $\gamma\gamma$ -coin,  $\gamma(\theta)$ . Deduced levels, J,  $\pi$ , band structures,  $\gamma$ -ray multiplicities, mixing ratios.

**1977Ha36:** E=19.8-27 MeV alpha beams were produced from the Rossendorf cyclotron U-120 at GDR. Target was  $\approx 10$  mg/cm<sup>2</sup> 95% enriched <sup>121</sup>Sb metallic powder on a 0.5 mg/cm<sup>2</sup> lvsan backing.  $\gamma$  rays were detected with Ge(Li) detectors; conversion electrons were selected with a broad-range electron spectrometer and detected with a Si(Li) detector. Measured E $\gamma$ , I $\gamma$ , excitation functions,  $\gamma\gamma$ -coin,  $\gamma\gamma(t)$ ,  $\gamma(\theta)$ , E(ce), I(ce). Deduced levels, J,  $\pi$ , isomer T<sub>1/2</sub>, band structures, conversion coefficients,  $\gamma$ -ray multiplicities. Systematics of neighboring odd-mass I isotopes. Comparisons with theoretical calculations.

**1988Ko16:** E=27 MeV alpha beam was produced from the Rossendorf cyclotron. Target was  $\approx 20$  mg/cm<sup>2</sup> 98.5% enriched Sb<sub>2</sub>O<sub>4</sub>.  $\gamma$  rays were detected with a Ge(Li) detector. Measured E $\gamma$ , I $\gamma$ ,  $\gamma(t)$ . Deduced T<sub>1/2</sub>, transition strengths. Comparisons with theoretical calculations.

Others (measured cross sections): [2011Ud01](#), [2006Ha01](#), [1994Bh12](#), [1991Si15](#), [1990Is01](#), [1982Ca10](#), [1981Ve17](#).

<sup>123</sup>I Levels

Band assignments and configurations are from [1993Go04](#).

| E(level) <sup>†</sup>       | J $\pi$ <sup>‡</sup> | T <sub>1/2</sub> <sup>#</sup> | E(level) <sup>†</sup>     | J $\pi$ <sup>‡</sup> | T <sub>1/2</sub> <sup>#</sup> | E(level) <sup>†</sup>     | J $\pi$ <sup>‡</sup> | T <sub>1/2</sub> <sup>#</sup> |
|-----------------------------|----------------------|-------------------------------|---------------------------|----------------------|-------------------------------|---------------------------|----------------------|-------------------------------|
| 0.0 <sup>@</sup>            | 5/2 <sup>+</sup>     |                               | 1453.04 <sup>a</sup> 9    | 15/2 <sup>-</sup>    |                               | 2339.0? 4                 |                      |                               |
| 138.38 <sup>b</sup> 5       | 7/2 <sup>+</sup>     |                               | 1576.58 <sup>b</sup> 18   | 15/2 <sup>(+)</sup>  |                               | 2361.85 21                | (19/2 <sup>+</sup> ) |                               |
| 149.07 20                   | 1/2 <sup>+</sup>     |                               | 1602.50 22                | (15/2 <sup>+</sup> ) |                               | 2369.56 25                |                      |                               |
| 178.00 20                   | 3/2 <sup>+</sup>     | 0.3 ns I                      | 1607.06? 16               | (15/2 <sup>+</sup> ) |                               | 2439.9 4                  |                      |                               |
| 302.20? 10                  |                      | 0.8 ns I                      | 1632.58 22                | (13/2 <sup>-</sup> ) |                               | 2466.2 <sup>b</sup> 3     | 19/2 <sup>(+)</sup>  |                               |
| 330.1 3                     | 3/2 <sup>+</sup>     |                               | 1690.30 <sup>c</sup> 16   | 15/2 <sup>+</sup>    |                               | 2481.5? 4                 |                      |                               |
| 474.14 <sup>&amp;</sup> 9   | 7/2 <sup>+</sup>     |                               | 1791.1 <sup>&amp;</sup> 3 | (15/2 <sup>+</sup> ) |                               | 2500.9 <sup>c</sup> 3     | 19/2 <sup>(+)</sup>  |                               |
| 552.35 <sup>@</sup> 6       | 9/2 <sup>+</sup>     |                               | 1816.0 3                  |                      |                               | 2567.3 3                  |                      |                               |
| 641.26 <sup>c</sup> 7       | 9/2 <sup>+</sup>     | 0.2 ns I                      | 1871.38 <sup>@</sup> 17   | 17/2 <sup>+</sup>    |                               | 2613.84 <sup>a</sup> 25   | 23/2 <sup>-</sup>    |                               |
| 671.01 6                    | 9/2 <sup>+</sup>     |                               | 2000.5? 3                 | ( <sup>+</sup> )     | 0.4 ns I                      | 2647.4 <sup>&amp;</sup> 4 | (19/2 <sup>+</sup> ) |                               |
| 794.11 <sup>b</sup> 10      | 11/2 <sup>+</sup>    |                               | 2016.13 19                | (17/2 <sup>+</sup> ) |                               | 2659.9 3                  | (21/2 <sup>+</sup> ) | 28 ns 2                       |
| 943.47 <sup>a</sup> 7       | 11/2 <sup>-</sup>    | 0.2 ns I                      | 2039.76 <sup>a</sup> 14   | 19/2 <sup>-</sup>    |                               | 2712.0 <sup>@</sup> 3     | 21/2 <sup>(+)</sup>  |                               |
| 972.42 <sup>c</sup> 9       | 11/2 <sup>+</sup>    |                               | 2081.98 <sup>c</sup> 21   | 17/2 <sup>(+)</sup>  |                               | 2790.4 4                  |                      |                               |
| 1080.13 <sup>&amp;</sup> 19 | 11/2 <sup>(+)</sup>  |                               | 2262.1 4                  |                      |                               | 2947.8 4                  | (21/2 <sup>-</sup> ) |                               |
| 1156.19 <sup>@</sup> 15     | 13/2 <sup>+</sup>    |                               | 2265.65 22                | (17/2 <sup>-</sup> ) |                               | 3409?                     |                      |                               |
| 1315.51 <sup>c</sup> 12     | 13/2 <sup>+</sup>    |                               | 2282.4? 11                | (17/2 <sup>+</sup> ) |                               | 3512.3 <sup>a</sup> 4     | (27/2 <sup>-</sup> ) |                               |
| 1437.42 18                  | 13/2 <sup>(+)</sup>  |                               | 2319.6 11                 |                      |                               | 3697?                     |                      |                               |

<sup>†</sup> From a least-squares fit to  $\gamma$ -ray energies.

<sup>‡</sup> From Adopted Levels. The assignments from this dataset are mostly from [1977Ha36](#) based on  $\gamma(\theta)$  and ce data, and they are the same as the adopted assignments, except that parentheses will be added there if there is no firm experimental evidence.

<sup>#</sup> From generalized centroid-shift method ([1988Ko16](#)).

<sup>@</sup> Band(A):  $\pi 2d_{5/2}$  decoupled band.

<sup>&</sup> Band(B):  $\pi 2d_{5/2}$  nonaligned band.

<sup>a</sup> Band(C):  $\pi 1h_{11/2}$  band.

<sup>b</sup> Band(D):  $\pi 1g_{7/2}$  band.

<sup>c</sup> Band(E):  $\pi 9/2[404]$  band.

<sup>121</sup>Sb( $\alpha,2n\gamma$ ) **1993Go04,1977Ha36** (continued)

| $\gamma(^{123}\text{I})$ |                         |                     |                   |          |                      |                    |            |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|-------------------------|---------------------|-------------------|----------|----------------------|--------------------|------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $E_\gamma$ <sup>‡</sup>  | $I_\gamma$ <sup>#</sup> | $E_i(\text{level})$ | $J_i^\pi$         | $E_f$    | $J_f^\pi$            | Mult. <sup>a</sup> | $\delta^b$ | $\alpha^\dagger$ | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 118.64 20                | 1.0 2                   | 671.01              | 9/2 <sup>+</sup>  | 552.35   | 9/2 <sup>+</sup>     |                    |            |                  | $E_\gamma$ : weighted average of 118.63 20 from 1977Ha36 and 119 1 from 1993Go04.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 138.38 5                 | 212 18                  | 138.38              | 7/2 <sup>+</sup>  | 0.0      | 5/2 <sup>+</sup>     | M1+E2              | -0.15 5    | 0.306 6          | $I_\gamma$ : from 1977Ha36 (27 MeV) and 1993Go04.<br>$\alpha(\text{K})=0.262 5$ ; $\alpha(\text{L})=0.0353 14$ ; $\alpha(\text{M})=0.0071 3$<br>$\alpha(\text{N})=0.00144 6$ ; $\alpha(\text{O})=0.000166 6$<br>$E_\gamma$ : weighted average of 138.37 5 from 1977Ha36 and 138.4 1 from 1993Go04.<br>$I_\gamma$ : unweighted average of 244 12 from 1977Ha36 (22 MeV), 182 9 from 1977Ha36 (27 MeV), and 210 11 from 1993Go04.<br>Mult.: from Adopted Gammas. D+Q from $A_2=-0.25 2$ , $A_4=-0.04 3$ (1977Ha36); $A_2=-0.28 1$ , $A_4=-0.03 1$ (1993Go04); M1 with $\alpha(\text{K})_{\text{exp}}=0.26 1$ is assumed by 1977Ha36 for normalization of their measured conversion coefficients. |
| 149.07 20                | 4.7 13                  | 149.07              | 1/2 <sup>+</sup>  | 0.0      | 5/2 <sup>+</sup>     |                    |            |                  | $E_\gamma$ : from 1977Ha36.<br>$I_\gamma$ : weighted average of 7.0 14 (22 MeV) and 4.0 8 (27 MeV) from 1977Ha36.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 167.08 20                | 1.0 2                   | 641.26              | 9/2 <sup>+</sup>  | 474.14   | 7/2 <sup>+</sup>     |                    |            |                  | $A_2=+0.31 5$ (1977Ha36).<br>$E_\gamma, I_\gamma$ : from 1977Ha36 (27 MeV). Other: $I_\gamma < 2$ from 1977Ha36 (22 MeV).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 178.00 20                | 13 6                    | 178.00              | 3/2 <sup>+</sup>  | 0.0      | 5/2 <sup>+</sup>     |                    |            |                  | $E_\gamma$ : from 1977Ha36.<br>$I_\gamma$ : unweighted average of 18 3 from 1977Ha36 (22 MeV) and 7.0 14 from 1977Ha36 (27 MeV).<br>$A_2=-0.05 4$ , $A_4=-0.22 11$ (1977Ha36).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 196.8 3                  | 4.0& 8                  | 671.01              | 9/2 <sup>+</sup>  | 474.14   | 7/2 <sup>+</sup>     |                    |            |                  | $E_\gamma$ : weighted average of 196.6 3 from 1977Ha36 and 197.0 3 from 1993Go04.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 208.96 20                | 2.6 5                   | 1816.0              |                   | 1607.06? | (15/2 <sup>+</sup> ) |                    |            |                  | $I_\gamma$ : from 1993Go04. Other: $< 3$ from 1977Ha36 (27 MeV).<br>$E_\gamma$ : weighted average of 208.94 20 from 1977Ha36 and 209.0 3 from 1993Go04.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 241.69 20                | 5.8 10                  | 794.11              | 11/2 <sup>+</sup> | 552.35   | 9/2 <sup>+</sup>     |                    |            |                  | $I_\gamma$ : weighted average of 3.0 6 from 1977Ha36 (22 MeV), 4.0 8 from 1977Ha36 (27 MeV), and 2.0 4 from 1993Go04.<br>$A_2=-0.58 4$ (1977Ha36).<br>$E_\gamma$ : weighted average of 241.69 20 from 1977Ha36 and 241.7 3 from 1993Go04.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 272.46 5                 | 100 5                   | 943.47              | 11/2 <sup>-</sup> | 671.01   | 9/2 <sup>+</sup>     | E1                 |            | 0.01279          | $I_\gamma$ : weighted average of 6.0 12 from 1977Ha36 (22 MeV), 5.0 10 from 1977Ha36 (27 MeV), and 7.0 14 from 1993Go04.<br>$A_2=-0.26 6$ (1977Ha36).<br>$\alpha(\text{K})=0.01106 16$ ; $\alpha(\text{L})=0.001383 20$ ; $\alpha(\text{M})=0.000277 4$<br>$\alpha(\text{N})=5.56 \times 10^{-5} 8$ ; $\alpha(\text{O})=6.39 \times 10^{-6} 9$<br>$E_\gamma$ : weighted average of 272.47 5 from 1977Ha36 and 272.4 1 from 1993Go04.<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.009 1$ , $A_2=-0.18 2$ , $A_4=-0.03 5$ (1977Ha36),<br>$A_2=-0.19 2$ , $A_4=-0.02 5$ (1993Go04).                                                                                                                |

<sup>121</sup>Sb( $\alpha, 2n\gamma$ ) [1993Go04,1977Ha36](#) (continued)

$\gamma(^{123}\text{I})$  (continued)

| $E_\gamma^{\ddagger}$             | $I_\gamma^{\#}$            | $E_i(\text{level})$ | $J_i^\pi$                                 | $E_f$              | $J_f^\pi$                                   | Mult. <sup>a</sup> | $\delta^b$     | $\alpha^\dagger$ | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------|----------------------------|---------------------|-------------------------------------------|--------------------|---------------------------------------------|--------------------|----------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 291.55 10                         | 3.7 6                      | 1607.06?            | (15/2 <sup>+</sup> )                      | 1315.51            | 13/2 <sup>+</sup>                           | (M1+E2)            |                | 0.0421 21        | $\alpha(\text{K})=0.0356$ 10; $\alpha(\text{L})=0.0053$ 9; $\alpha(\text{M})=0.00107$ 19<br>$\alpha(\text{N})=0.00021$ 4; $\alpha(\text{O})=2.4\times 10^{-5}$ 3<br>$E_\gamma$ : weighted average of 291.55 20 from <a href="#">1977Ha36</a> and 291.4 3 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 3.0 6 from <a href="#">1977Ha36</a> (22 MeV), 5.0 10 from <a href="#">1977Ha36</a> (27 MeV), and 4.0 8 from <a href="#">1993Go04</a> .<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.046$ 9, $A_2=-0.43$ 5 ( <a href="#">1977Ha36</a> ).<br><a href="#">Additional information 1</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 294.7 <sup>@</sup> 3<br>298.06 20 | 3.0 <sup>@</sup> 6<br>10 2 | 1871.38<br>2659.9   | 17/2 <sup>+</sup><br>(21/2 <sup>+</sup> ) | 1576.58<br>2361.85 | 15/2 <sup>(+)</sup><br>(19/2 <sup>+</sup> ) | (M1,E2)            |                | 0.0395 17        | $\alpha(\text{K})=0.0334$ 8; $\alpha(\text{L})=0.0049$ 8; $\alpha(\text{M})=0.00100$ 17<br>$\alpha(\text{N})=0.00020$ 3; $\alpha(\text{O})=2.23\times 10^{-5}$ 24<br>$E_\gamma$ : weighted average of 298.12 20 from <a href="#">1977Ha36</a> and 298.0 2 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 8.0 16 from <a href="#">1977Ha36</a> (22 MeV), 13.0 25 from <a href="#">1977Ha36</a> (27 MeV), and 13.0 25 from <a href="#">1993Go04</a> .<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.032$ 6, $A_2=+0.01$ 4, $A_4=+0.06$ 10 ( <a href="#">1977Ha36</a> ).<br>$E_\gamma$ : from <a href="#">1977Ha36</a> .<br>$I_\gamma$ : unweighted average of 10.0 20 from <a href="#">1977Ha36</a> (22 MeV) and 5.0 10 from <a href="#">1977Ha36</a> (27 MeV).<br>$\alpha(\text{K})=0.0298$ 5; $\alpha(\text{L})=0.0043$ 6; $\alpha(\text{M})=0.00088$ 13<br>$\alpha(\text{N})=0.000176$ 24; $\alpha(\text{O})=1.97\times 10^{-5}$ 18<br>$E_\gamma$ : weighted average of 310.24 20 from <a href="#">1977Ha36</a> and 310.1 2 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 12.0 23 from <a href="#">1977Ha36</a> (22 MeV), 8.0 16 from <a href="#">1977Ha36</a> (27 MeV), and 13.0 25 from <a href="#">1993Go04</a> .<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.025$ 4, $A_2=+0.11$ 3, $A_4=+0.00$ 7 ( <a href="#">1977Ha36</a> ). |
| 302.2 <sup>d</sup> 3              | 7.5 25                     | 302.20?             |                                           | 0.0                | 5/2 <sup>+</sup>                            |                    |                |                  | $E_\gamma$ : from <a href="#">1977Ha36</a> .<br>$I_\gamma$ : unweighted average of 10.0 20 from <a href="#">1977Ha36</a> (22 MeV) and 5.0 10 from <a href="#">1977Ha36</a> (27 MeV).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 310.17 20                         | 10 2                       | 2000.5?             | ( <sup>+</sup> )                          | 1690.30            | 15/2 <sup>+</sup>                           | (M1,E2)            |                | 0.0352 11        | $\alpha(\text{K})=0.0298$ 5; $\alpha(\text{L})=0.0043$ 6; $\alpha(\text{M})=0.00088$ 13<br>$\alpha(\text{N})=0.000176$ 24; $\alpha(\text{O})=1.97\times 10^{-5}$ 18<br>$E_\gamma$ : weighted average of 310.24 20 from <a href="#">1977Ha36</a> and 310.1 2 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 12.0 23 from <a href="#">1977Ha36</a> (22 MeV), 8.0 16 from <a href="#">1977Ha36</a> (27 MeV), and 13.0 25 from <a href="#">1993Go04</a> .<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.025$ 4, $A_2=+0.11$ 3, $A_4=+0.00$ 7 ( <a href="#">1977Ha36</a> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 329.8 <sup>@</sup> 2<br>330.1 3   | 10 <sup>@</sup> 2<br>19 11 | 2369.56<br>330.1    | 3/2 <sup>+</sup>                          | 2039.76<br>0.0     | 19/2 <sup>-</sup><br>5/2 <sup>+</sup>       |                    |                |                  | $E_\gamma$ : from <a href="#">1977Ha36</a> .<br>$I_\gamma$ : unweighted average of 30 4 from <a href="#">1977Ha36</a> (22 MeV) and 8.0 16 from <a href="#">1977Ha36</a> (27 MeV).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 331.16 5                          | 101 5                      | 972.42              | 11/2 <sup>+</sup>                         | 641.26             | 9/2 <sup>+</sup>                            | M1+E2              | $\approx +0.2$ | $\approx 0.0289$ | $\alpha(\text{K})\approx 0.0249$ ; $\alpha(\text{L})\approx 0.00320$ ; $\alpha(\text{M})\approx 0.000643$<br>$\alpha(\text{N})\approx 0.0001301$ ; $\alpha(\text{O})\approx 1.525\times 10^{-5}$<br>$E_\gamma$ : weighted average of 331.17 5 from <a href="#">1977Ha36</a> and 331.1 1 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 95 5 from <a href="#">1977Ha36</a> (22 MeV), 98 5 from <a href="#">1977Ha36</a> (27 MeV), and 113 6 from <a href="#">1993Go04</a> .<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.026$ 2, $A_2=+0.08$ 2, $A_4=-0.03$ 4 ( <a href="#">1977Ha36</a> ), $A_2=0.08$ 2, $A_4=+0.03$ 4 ( <a href="#">1993Go04</a> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 338.5 3                           | 4.0 8                      | 2339.0?             |                                           | 2000.5?            | ( <sup>+</sup> )                            |                    |                |                  | $E_\gamma$ : weighted average of 338.4 3 from <a href="#">1977Ha36</a> and 338.6 3 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 4.0 8 from <a href="#">1977Ha36</a> (27 MeV) and 4.0 8 from <a href="#">1993Go04</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 343.10 10                         | 49 3                       | 1315.51             | 13/2 <sup>+</sup>                         | 972.42             | 11/2 <sup>+</sup>                           | M1+E2              | $\approx +0.2$ | $\approx 0.0264$ | $\alpha(\text{K})\approx 0.0228$ ; $\alpha(\text{L})\approx 0.00291$ ; $\alpha(\text{M})\approx 0.000585$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

<sup>121</sup>Sb( $\alpha, 2n\gamma$ ) [1993Go04](#), [1977Ha36](#) (continued)

$\gamma(^{123}\text{I})$  (continued)

| $E_\gamma^{\ddagger}$ | $I_\gamma^{\#}$ | $E_i(\text{level})$ | $J_i^\pi$                                | $E_f$             | $J_f^\pi$                                | Mult. <sup>a</sup> | $\delta^b$     | $\alpha^\ddagger$ | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|-----------------|---------------------|------------------------------------------|-------------------|------------------------------------------|--------------------|----------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |                 |                     |                                          |                   |                                          |                    |                |                   | $\alpha(\text{N})\approx 0.0001185$ ; $\alpha(\text{O})\approx 1.389\times 10^{-5}$<br>$E_\gamma$ : weighted average of 343.11 20 from <a href="#">1977Ha36</a> and 343.1 1 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 47 3 from <a href="#">1977Ha36</a> (22 MeV), 47 3 from <a href="#">1977Ha36</a> (27 MeV), and 53 3 from <a href="#">1993Go04</a> .<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.024$ 2, $A_2=+0.05$ 2, $A_4=-0.05$ 6 ( <a href="#">1977Ha36</a> ), $A_2=+0.07$ 3, $A_4=+0.05$ 4 ( <a href="#">1993Go04</a> ).<br>$E_\gamma$ : weighted average of 345.62 20 from <a href="#">1977Ha36</a> and 345.7 2 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 9.0 18 from <a href="#">1977Ha36</a> (22 MeV), 10.0 20 from <a href="#">1977Ha36</a> (27 MeV), and 11.0 22 from <a href="#">1993Go04</a> .<br>Mult.: $A_2=-0.26$ 3, $A_4=-0.19$ 10 ( <a href="#">1977Ha36</a> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 345.66 20             | 10 2            | 2361.85             | (19/2 <sup>+</sup> )                     | 2016.13           | (17/2 <sup>+</sup> )                     | (D)                |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 357.3 @ 3<br>362.1 2  | 4.0 @ 8<br>11 2 | 1437.42<br>1156.19  | 13/2 <sup>(+)</sup><br>13/2 <sup>+</sup> | 1080.13<br>794.11 | 11/2 <sup>(+)</sup><br>11/2 <sup>+</sup> | (M1)               |                | 0.0230            | $\alpha(\text{K})=0.0199$ 3; $\alpha(\text{L})=0.00251$ 4; $\alpha(\text{M})=0.000505$ 8<br>$\alpha(\text{N})=0.0001023$ 15; $\alpha(\text{O})=1.204\times 10^{-5}$ 17<br>$E_\gamma$ : weighted average of 362.2 3 from <a href="#">1977Ha36</a> and 362.1 2 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 12.0 23 from <a href="#">1977Ha36</a> (22 MeV), 11.0 22 from <a href="#">1977Ha36</a> (27 MeV), and 10.0 20 from <a href="#">1993Go04</a> .<br>Mult.: M1,E2 from $\alpha(\text{K})_{\text{exp}}=0.025$ 8, M1 favored by $A_2=-0.64$ 4, $A_4=+0.02$ 12 ( <a href="#">1977Ha36</a> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 374.81 20             | 31 4            | 1690.30             | 15/2 <sup>+</sup>                        | 1315.51           | 13/2 <sup>+</sup>                        | M1+E2              | $\approx +0.2$ | $\approx 0.0210$  | $\alpha(\text{K})\approx 0.0181$ ; $\alpha(\text{L})\approx 0.00231$ ; $\alpha(\text{M})\approx 0.000464$<br>$\alpha(\text{N})\approx 9.40\times 10^{-5}$ ; $\alpha(\text{O})\approx 1.103\times 10^{-5}$<br>$E_\gamma$ : weighted average of 374.82 20 from <a href="#">1977Ha36</a> (27 MeV) and 374.8 2 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 25 4 from <a href="#">1977Ha36</a> (22 MeV), 32 4 from <a href="#">1977Ha36</a> (27 MeV), and 37 4 from <a href="#">1993Go04</a> .<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.023$ 3, $A_2=+0.03$ 2, $A_4=+0.07$ 7 ( <a href="#">1977Ha36</a> ), $A_2=+0.08$ 4, $A_4=+0.06$ 6 ( <a href="#">1993Go04</a> ).<br>$E_\gamma$ : weighted average of 391.17 20 from <a href="#">1977Ha36</a> (27 MeV) and 391.1 2 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 17 3 from <a href="#">1977Ha36</a> (22 MeV), 17 3 from <a href="#">1977Ha36</a> (27 MeV), and 25 4 from <a href="#">1993Go04</a> .<br>$A_2=-0.11$ 4, $A_4=-0.04$ 7 ( <a href="#">1977Ha36</a> ), $A_2=-0.11$ 6, $A_4=+0.09$ 7 ( <a href="#">1993Go04</a> ), for a doublet with 391.7 $\gamma$ from 2082 level.<br>$E_\gamma$ : weighted average of 391.80 20 from <a href="#">1977Ha36</a> and 391.6 2 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 8.0 16 from <a href="#">1977Ha36</a> (22 MeV), 12.0 23 from <a href="#">1977Ha36</a> (27 MeV), and 14 3 from <a href="#">1993Go04</a> .<br>Mult.: $A_2=-0.11$ 4, $A_4=-0.04$ 7 for 391.8 $\gamma$ + 391.17 $\gamma$ .<br>$E_\gamma, I_\gamma$ : from <a href="#">1977Ha36</a> .<br>$A_2=+0.35$ 7 ( <a href="#">1977Ha36</a> ). |
| 374.81 20             | 31 4            | 1690.30             | 15/2 <sup>+</sup>                        | 1315.51           | 13/2 <sup>+</sup>                        | M1+E2              | $\approx +0.2$ | $\approx 0.0210$  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 391.14 20             | 19 3            | 943.47              | 11/2 <sup>-</sup>                        | 552.35            | 9/2 <sup>+</sup>                         |                    |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 391.70 20             | 10 2            | 2081.98             | 17/2 <sup>(+)</sup>                      | 1690.30           | 15/2 <sup>+</sup>                        |                    |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 399.5 3               | 4.0 8           | 2481.5?             |                                          | 2081.98           | 17/2 <sup>(+)</sup>                      |                    |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 409 @ 1               | 2.0 @ 4         | 1080.13             | 11/2 <sup>(+)</sup>                      | 671.01            | 9/2 <sup>+</sup>                         |                    |                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

<sup>121</sup>Sb( $\alpha,2n\gamma$ ) [1993Go04,1977Ha36](#) (continued)

$\gamma(^{123}\text{I})$  (continued)

| $E_\gamma^{\ddagger}$ | $I_\gamma^{\#}$ | $E_i(\text{level})$ | $J_i^\pi$            | $E_f$   | $J_f^\pi$            | Mult. <sup>a</sup> | $\alpha^\ddagger$ | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|-----------------|---------------------|----------------------|---------|----------------------|--------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 413.6 2               | 12 2            | 2016.13             | (17/2 <sup>+</sup> ) | 1602.50 | (15/2 <sup>+</sup> ) | (M1+E2)            | 0.0156 9          | $\alpha(\text{K})=0.0133$ 9; $\alpha(\text{L})=0.00183$ 5; $\alpha(\text{M})=0.000369$ 12<br>$\alpha(\text{N})=7.43\times 10^{-5}$ 19; $\alpha(\text{O})=8.47\times 10^{-6}$ 16<br>$E_\gamma$ : weighted average of 413.7 3 from <a href="#">1977Ha36</a> and 413.6 2 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 11.0 22 from <a href="#">1977Ha36</a> (27 MeV), and 14 3 from <a href="#">1993Go04</a> . Other: 110 6 from <a href="#">1977Ha36</a> (22 MeV) for a doublet with 414.0 from 552 level.<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.015$ 1, $A_2=-0.48$ 2, $A_4=-0.02$ 3, for 413.6 $\gamma$ +414.0 $\gamma$ doublet ( <a href="#">1977Ha36</a> ).<br>Additional information 2.                                                |
| 413.98 5              | 94 8            | 552.35              | 9/2 <sup>+</sup>     | 138.38  | 7/2 <sup>+</sup>     | M1                 | 0.01638           | $\alpha(\text{K})=0.01416$ 20; $\alpha(\text{L})=0.001784$ 25; $\alpha(\text{M})=0.000358$ 5<br>$\alpha(\text{N})=7.26\times 10^{-5}$ 11; $\alpha(\text{O})=8.55\times 10^{-6}$ 12<br>$E_\gamma$ : weighted average of 414.00 5 from <a href="#">1977Ha36</a> and 413.9 1 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : unweighted average of 110 6 from <a href="#">1977Ha36</a> (22 MeV), 83 4 from <a href="#">1977Ha36</a> (27 MeV), and 89 5 from <a href="#">1993Go04</a> .<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.015$ 1, $A_2=-0.48$ 2, $A_4=-0.02$ 3 ( <a href="#">1977Ha36</a> ), $A_2=-0.53$ 2, $A_4=-0.01$ 4 ( <a href="#">1993Go04</a> ), for a doublet with 413.6 $\gamma$ from the 2016 level.<br>$A_2=-0.08$ 16 from <a href="#">1993Go04</a> . |
| 419.0@ 3              | 8.0@ 16         | 2500.9              | 19/2 <sup>(+)</sup>  | 2081.98 | 17/2 <sup>(+)</sup>  |                    |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 420.4@ 3              | 3.0@ 6          | 1576.58             | 15/2 <sup>(+)</sup>  | 1156.19 | 13/2 <sup>+</sup>    |                    |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 423.8@ 3              | 6.0@ 12         | 2439.9              |                      | 2016.13 | (17/2 <sup>+</sup> ) |                    |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 474.11 11             | 81 11           | 474.14              | 7/2 <sup>+</sup>     | 0.0     | 5/2 <sup>+</sup>     | M1                 | 0.01168           | $\alpha(\text{K})=0.01010$ 15; $\alpha(\text{L})=0.001266$ 18; $\alpha(\text{M})=0.000254$ 4<br>$\alpha(\text{N})=5.15\times 10^{-5}$ 8; $\alpha(\text{O})=6.07\times 10^{-6}$ 9<br>$E_\gamma$ : weighted average of 474.22 10 from <a href="#">1977Ha36</a> and 474.0 1 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : unweighted average of 102 5 from <a href="#">1977Ha36</a> (22 MeV), 66 3 from <a href="#">1977Ha36</a> (27 MeV), and 75 4 from <a href="#">1993Go04</a> .<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.010$ 1, $A_2=-0.57$ 2, $A_4=-0.05$ 4 ( <a href="#">1977Ha36</a> ), $A_2=-0.59$ 3, $A_4=-0.05$ 4 ( <a href="#">1993Go04</a> ).                                                                                                           |
| 502.90 10             | 61 3            | 641.26              | 9/2 <sup>+</sup>     | 138.38  | 7/2 <sup>+</sup>     | M1                 | 0.01010           | $\alpha(\text{K})=0.00873$ 13; $\alpha(\text{L})=0.001093$ 16; $\alpha(\text{M})=0.000219$ 3<br>$\alpha(\text{N})=4.45\times 10^{-5}$ 7; $\alpha(\text{O})=5.24\times 10^{-6}$ 8<br>$E_\gamma$ : weighted average of 503.00 10 from <a href="#">1977Ha36</a> and 502.8 1 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 64 3 from <a href="#">1977Ha36</a> (22 MeV), 59 3 from <a href="#">1977Ha36</a> (27 MeV), and 61 3 from <a href="#">1993Go04</a> .<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.0095$ 10, $A_2=-0.58$ 2, $A_4=-0.04$ 4 ( <a href="#">1977Ha36</a> ), $A_2=-0.53$ 3, $A_4=-0.08$ 5 ( <a href="#">1993Go04</a> ).                                                                                                            |
| 509.57 5              | 100 5           | 1453.04             | 15/2 <sup>-</sup>    | 943.47  | 11/2 <sup>-</sup>    | E2                 | 0.00812           | $\alpha(\text{K})=0.00690$ 10; $\alpha(\text{L})=0.000979$ 14; $\alpha(\text{M})=0.000198$ 3<br>$\alpha(\text{N})=3.97\times 10^{-5}$ 6; $\alpha(\text{O})=4.46\times 10^{-6}$ 7<br>$E_\gamma$ : weighted average of 509.56 5 from <a href="#">1977Ha36</a> and 509.6 1 from <a href="#">1993Go04</a> .<br>$I_\gamma$ : weighted average of 94 5 from <a href="#">1977Ha36</a> (27 MeV) and 105 5 from                                                                                                                                                                                                                                                                                                                                                                |

<sup>121</sup>Sb( $\alpha, 2n\gamma$ ) **1993Go04, 1977Ha36** (continued)

$\gamma(^{123}\text{I})$  (continued)

| $E_\gamma^{\ddagger}$           | $I_\gamma^{\#}$            | $E_i(\text{level})$ | $J_i^\pi$                               | $E_f$             | $J_f^\pi$                                 | Mult. <sup>a</sup> | $\alpha^\dagger$ | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|----------------------------|---------------------|-----------------------------------------|-------------------|-------------------------------------------|--------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 |                            |                     |                                         |                   |                                           |                    |                  | <b>1993Go04.</b><br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.0075$ 6, $A_2=+0.21$ 5, $A_4=-0.05$ 11 ( <b>1977Ha36</b> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 528 <sup>@</sup> 1<br>532.55 20 | 2.0 <sup>@</sup> 4<br>25 4 | 1080.13<br>671.01   | 11/2 <sup>(+)</sup><br>9/2 <sup>+</sup> | 552.35<br>138.38  | 9/2 <sup>+</sup><br>7/2 <sup>+</sup>      | D                  |                  | $E_\gamma$ : weighted average of 532.69 20 from <b>1977Ha36</b> and 532.4 2 from <b>1993Go04</b> .<br>$I_\gamma$ : weighted average of 26 4 from <b>1977Ha36</b> (22 MeV), 24 4 from <b>1977Ha36</b> (27 MeV), and 25 4 from <b>1993Go04</b> .                                                                                                                                                                                                                                                                                                                                                    |
| 552.32 12                       | 60 5                       | 552.35              | 9/2 <sup>+</sup>                        | 0.0               | 5/2 <sup>+</sup>                          | E2                 | 0.00651          | Mult.: $A_2=-0.33$ 4 ( <b>1977Ha36</b> ), $A_2=-0.32$ 4, $A_4=+0.08$ 6 ( <b>1993Go04</b> ).<br>$\alpha(\text{K})=0.00555$ 8; $\alpha(\text{L})=0.000773$ 11; $\alpha(\text{M})=0.0001563$ 22<br>$\alpha(\text{N})=3.13 \times 10^{-5}$ 5; $\alpha(\text{O})=3.54 \times 10^{-6}$ 5<br>$E_\gamma$ : weighted average of 552.43 10 from <b>1977Ha36</b> and 552.2 1 from <b>1993Go04</b> .<br>$I_\gamma$ : unweighted average of 62 3 from <b>1977Ha36</b> (22 MeV), 50.0 25 from <b>1977Ha36</b> (27 MeV), and 68 4 from <b>1993Go04</b> .                                                         |
| 574.08 20                       | 27 7                       | 2613.84             | 23/2 <sup>-</sup>                       | 2039.76           | 19/2 <sup>-</sup>                         | E2                 | 0.00587          | Mult.: $\alpha(\text{K})_{\text{exp}}=0.0058$ 6, $A_2=+0.32$ 2, $A_4=-0.03$ 5 ( <b>1977Ha36</b> ), $A_2=+0.30$ 4, $A_4=-0.06$ 5 ( <b>1993Go04</b> ).<br>$\alpha(\text{K})=0.00500$ 7; $\alpha(\text{L})=0.000692$ 10; $\alpha(\text{M})=0.0001398$ 20<br>$\alpha(\text{N})=2.81 \times 10^{-5}$ 4; $\alpha(\text{O})=3.18 \times 10^{-6}$ 5<br>$E_\gamma$ : weighted average of 574.25 20 from <b>1977Ha36</b> and 573.9 2 from <b>1993Go04</b> .<br>$I_\gamma$ : unweighted average of 14 3 from <b>1977Ha36</b> (22 MeV), 27 4 from <b>1977Ha36</b> (27 MeV), and 39 4 from <b>1993Go04</b> .   |
| 586.71 11                       | 56 11                      | 2039.76             | 19/2 <sup>-</sup>                       | 1453.04           | 15/2 <sup>-</sup>                         | E2                 | 0.00554          | Mult.: $\alpha(\text{K})_{\text{exp}}=0.0061$ 15, $A_2=+0.35$ 4, $A_4=-0.08$ 11 ( <b>1977Ha36</b> ), $A_2=+0.31$ 7, $A_4=-0.10$ 8 ( <b>1993Go04</b> ).<br>$\alpha(\text{K})=0.00473$ 7; $\alpha(\text{L})=0.000650$ 10; $\alpha(\text{M})=0.0001314$ 19<br>$\alpha(\text{N})=2.64 \times 10^{-5}$ 4; $\alpha(\text{O})=2.99 \times 10^{-6}$ 5<br>$E_\gamma$ : weighted average of 586.82 10 from <b>1977Ha36</b> and 586.6 1 from <b>1993Go04</b> .<br>$I_\gamma$ : unweighted average of 37 4 from <b>1977Ha36</b> (22 MeV), 55 3 from <b>1977Ha36</b> (27 MeV), and 75 4 from <b>1993Go04</b> . |
| 603.90 20                       | 83 11                      | 1156.19             | 13/2 <sup>+</sup>                       | 552.35            | 9/2 <sup>+</sup>                          | Q                  |                  | Mult.: $\alpha(\text{K})_{\text{exp}}=0.0058$ 12, $A_2=+0.39$ 3, $A_4=-0.03$ 8 ( <b>1977Ha36</b> ), $A_2=+0.37$ 4, $A_4=-0.04$ 5 ( <b>1993Go04</b> ).<br>$E_\gamma$ : unweighted average of 604.09 10 from <b>1977Ha36</b> and 603.7 1 from <b>1993Go04</b> .<br>$I_\gamma$ : unweighted average of 72 4 from <b>1977Ha36</b> (22 MeV), 73 4 from <b>1977Ha36</b> (27 MeV), and 104 5 from <b>1993Go04</b> .                                                                                                                                                                                      |
| 606.00 20                       | 40 4                       | 1080.13             | 11/2 <sup>(+)</sup>                     | 474.14            | 7/2 <sup>+</sup>                          | Q                  | 0.0051           | Mult.: $A_2=+0.36$ 3, $A_4=-0.05$ 5 ( <b>1977Ha36</b> ), $A_2=+0.35$ 7, $A_4=+0.00$ 7 ( <b>1993Go04</b> ).<br>$E_\gamma$ : weighted average of 606.10 20 from <b>1977Ha36</b> and 605.9 2 from <b>1993Go04</b> .<br>$I_\gamma$ : weighted average of 45 3 from <b>1977Ha36</b> (22 MeV), 32 4 from <b>1977Ha36</b> (27 MeV), and 40 4 from <b>1993Go04</b> .<br>Mult.: $A_2=+0.35$ 5, $A_4=-0.15$ 10 ( <b>1977Ha36</b> ), $A_2=+0.33$ 8, $A_4=+0.04$ 8 ( <b>1993Go04</b> ).                                                                                                                       |
| 629.5 <sup>@</sup> 3<br>630.0 3 | 3.0 <sup>@</sup> 6<br>18 3 | 2262.1<br>1602.50   | (15/2 <sup>+</sup> )                    | 1632.58<br>972.42 | (13/2 <sup>-</sup> )<br>11/2 <sup>+</sup> | (Q)                | 0.0046           | $E_\gamma$ : weighted average of 630.04 20 from <b>1977Ha36</b> (27 MeV) and 630.1 2 from <b>1993Go04</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

<sup>121</sup>Sb( $\alpha,2n\gamma$ ) [1993Go04,1977Ha36](#) (continued)

$\gamma(^{123}\text{I})$  (continued)

| $E_\gamma^{\ddagger}$ | $I_\gamma^{\#}$ | $E_i(\text{level})$ | $J_i^\pi$            | $E_f$   | $J_f^\pi$            | Mult. <sup>a</sup> | $\alpha^\dagger$ | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------|-----------------|---------------------|----------------------|---------|----------------------|--------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 641.26 10             | 71 5            | 641.26              | 9/2 <sup>+</sup>     | 0.0     | 5/2 <sup>+</sup>     | E2                 | 0.00439          | <p><math>I_\gamma</math>: weighted average of 16 3 from <a href="#">1977Ha36</a> (27 MeV) and 19 3 from <a href="#">1993Go04</a>.<br/>                     Mult.: <math>A_2=+0.28</math> 3, <math>A_4=+0.13</math> 9.<br/> <math>\alpha(\text{K})=0.00376</math> 6; <math>\alpha(\text{L})=0.000508</math> 8; <math>\alpha(\text{M})=0.0001026</math> 15<br/> <math>\alpha(\text{N})=2.06\times 10^{-5}</math> 3; <math>\alpha(\text{O})=2.35\times 10^{-6}</math> 4<br/> <math>E_\gamma</math>: weighted average of 641.31 10 from <a href="#">1977Ha36</a> and 641.2 1 from <a href="#">1993Go04</a>.<br/> <math>I_\gamma</math>: unweighted average of 70 4 from <a href="#">1977Ha36</a> (22 MeV), 63 3 from <a href="#">1977Ha36</a> (27 MeV), and 79 4 from <a href="#">1993Go04</a>.<br/>                     Mult.: <math>\alpha(\text{K})_{\text{exp}}=0.0035</math> 6, <math>A_2=+0.23</math> 2, <math>A_4=-0.04</math> 7 (<a href="#">1977Ha36</a>), <math>A_2=+0.15</math> 4, <math>A_4=-0.08</math> 6 (<a href="#">1993Go04</a>).</p> |
| 643 @d 1              | 2.0 @ 4         | 1437.42             | 13/2 <sup>(+)</sup>  | 794.11  | 11/2 <sup>+</sup>    |                    |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 655.73 10             | 74 5            | 794.11              | 11/2 <sup>+</sup>    | 138.38  | 7/2 <sup>+</sup>     | E2                 | 0.00415          | <p><math>\alpha(\text{K})=0.00355</math> 5; <math>\alpha(\text{L})=0.000478</math> 7; <math>\alpha(\text{M})=9.65\times 10^{-5}</math> 14<br/> <math>\alpha(\text{N})=1.94\times 10^{-5}</math> 3; <math>\alpha(\text{O})=2.22\times 10^{-6}</math> 4<br/> <math>E_\gamma</math>: weighted average of 655.76 10 from <a href="#">1977Ha36</a> and 655.7 1 from from <a href="#">1993Go04</a>.<br/> <math>I_\gamma</math>: unweighted average of 75 4 from <a href="#">1977Ha36</a> (22 MeV), 64 3 from <a href="#">1977Ha36</a> (27 MeV), and 82 4 from <a href="#">1993Go04</a>.<br/>                     Mult.: <math>\alpha(\text{K})_{\text{exp}}=0.0034</math> 6, <math>A_2=+0.29</math> 2, <math>A_4=-0.07</math> 6 (<a href="#">1977Ha36</a>), <math>A_2=+0.33</math> 4, <math>A_4=-0.07</math> 6 (<a href="#">1993Go04</a>).</p>                                                                                                                                                                                                           |
| 671.02 6              | 111 11          | 671.01              | 9/2 <sup>+</sup>     | 0.0     | 5/2 <sup>+</sup>     | E2                 | 0.00391          | <p><math>\alpha(\text{K})=0.00335</math> 5; <math>\alpha(\text{L})=0.000450</math> 7; <math>\alpha(\text{M})=9.07\times 10^{-5}</math> 13<br/> <math>\alpha(\text{N})=1.82\times 10^{-5}</math> 3; <math>\alpha(\text{O})=2.08\times 10^{-6}</math> 3<br/> <math>E_\gamma</math>: weighted average of 671.05 5 from <a href="#">1977Ha36</a> and 670.9 1 from <a href="#">1993Go04</a>.<br/> <math>I_\gamma</math>: unweighted average of 117 6 from <a href="#">1977Ha36</a> (22 MeV), 90 5 from <a href="#">1977Ha36</a> (27 MeV), and 125 6 from <a href="#">1993Go04</a>.<br/>                     Mult.: <math>\alpha(\text{K})_{\text{exp}}=0.0035</math> 6, <math>A_2=+0.24</math> 3, <math>A_4=-0.02</math> 8 (<a href="#">1977Ha36</a>), <math>A_2=+0.23</math> 3, <math>A_4=-0.03</math> 4 (<a href="#">1993Go04</a>), for a doublet with 671.6<math>\gamma</math> from 2362 level.<br/> <math>E_\gamma</math>: weighted average of 671.5 3 from <a href="#">1977Ha36</a> and 671.7 2 from <a href="#">1993Go04</a>.</p>                 |
| 671.6 2               | 15 3            | 2361.85             | (19/2 <sup>+</sup> ) | 1690.30 | 15/2 <sup>+</sup>    |                    |                  | <p><math>I_\gamma</math>: from <a href="#">1977Ha36</a> (27 MeV) and <a href="#">1993Go04</a>. Other: 117 6 from <a href="#">1977Ha36</a> (22 MeV) for a doublet with 671.0<math>\gamma</math> from 671 level.<br/>                     Mult.: <math>\alpha(\text{K})_{\text{exp}}=0.0035</math> 6, <math>A_2=+0.24</math> 3, <math>A_4=-0.02</math> 8 (<a href="#">1977Ha36</a>), <math>A_2=+0.23</math> 3, <math>A_4=-0.03</math> 4 (<a href="#">1993Go04</a>), for the doublet.<br/>                     Evidence from delayed coincidence (<a href="#">1977Ha36</a>).<br/> <math>E_\gamma</math>: weighted average of 674.3 3 from <a href="#">1977Ha36</a> and 674.2 2 from <a href="#">1993Go04</a>.</p>                                                                                                                                                                                                                                                                                                                                     |
| 674.2 2               | 15 3            | 1315.51             | 13/2 <sup>+</sup>    | 641.26  | 9/2 <sup>+</sup>     | Q                  | 0.00390          | <p><math>I_\gamma</math>: weighted average of 14 3 from <a href="#">1977Ha36</a> (22 MeV), 15 3 from <a href="#">1977Ha36</a> (27 MeV), and 17 3 from <a href="#">1993Go04</a>.<br/>                     Mult.: <math>A_2=+0.23</math> 2 (<a href="#">1977Ha36</a>), <math>A_2=+0.32</math> 11, <math>A_4=-0.13</math> 16 (<a href="#">1993Go04</a>).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 687 @ 1               | 2.0 @ 4         | 2319.6              |                      | 1632.58 | (13/2 <sup>-</sup> ) |                    |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 689.1 2               | 11 2            | 1632.58             | (13/2 <sup>-</sup> ) | 943.47  | 11/2 <sup>-</sup>    | (M1+E2)            | 0.0042 6         | <p><math>\alpha(\text{K})=0.0036</math> 5; <math>\alpha(\text{L})=0.00046</math> 5; <math>\alpha(\text{M})=9.3\times 10^{-5}</math> 9<br/> <math>\alpha(\text{N})=1.88\times 10^{-5}</math> 18; <math>\alpha(\text{O})=2.19\times 10^{-6}</math> 25<br/> <math>E_\gamma</math>: weighted average of 689.0 3 from <a href="#">1977Ha36</a> and 689.1 2 from</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



<sup>121</sup>Sb( $\alpha, 2n\gamma$ ) **1993Go04, 1977Ha36** (continued)

$\gamma(^{123}\text{I})$  (continued)

| $E_\gamma^{\ddagger}$ | $I_\gamma^{\#}$     | $E_i(\text{level})$ | $J_i^\pi$            | $E_f$   | $J_f^\pi$           | Mult. <sup>a</sup> | $\alpha^\dagger$ | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------|---------------------|---------------------|----------------------|---------|---------------------|--------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |                     |                     |                      |         |                     |                    |                  | 1993Go04.<br>I <sub><math>\gamma</math></sub> : weighted average of 13.0 25 from 1977Ha36 (22 MeV), 11.0 22 from 1977Ha36 (27 MeV), and 10.0 20 from 1993Go04.<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.0050$ 20, $A_2=-0.92$ 9 (1977Ha36).                                                                                                                                                                                                                                                                                                                                                                              |
| 696.0 <sup>@</sup> 3  | 6.0 <sup>@</sup> 12 | 2567.3              |                      | 1871.38 | 17/2 <sup>+</sup>   |                    |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 700.6 2               | 9 2                 | 2016.13             | (17/2 <sup>+</sup> ) | 1315.51 | 13/2 <sup>+</sup>   | (E2)               | 0.00351          | $\alpha(\text{K})=0.00301$ 5; $\alpha(\text{L})=0.000401$ 6; $\alpha(\text{M})=8.08\times 10^{-5}$ 12<br>$\alpha(\text{N})=1.627\times 10^{-5}$ 23; $\alpha(\text{O})=1.86\times 10^{-6}$ 3<br>E <sub><math>\gamma</math></sub> : weighted average of 700.7 3 from 1977Ha36 and 700.6 2 from 1993Go04.<br>I <sub><math>\gamma</math></sub> : weighted average of 7.0 14 from 1977Ha36 (22 MeV), 11.0 22 from 1977Ha36 (27 MeV), and 11.0 22 from 1993Go04.<br>Mult.: (M1,E2) from $\alpha(\text{K})_{\text{exp}}=0.0047$ 20, $A_2=+0.18$ 9 (1977Ha36); (E2) required by level scheme.                                      |
| 711.0 2               | 21 3                | 1791.1              | (15/2 <sup>+</sup> ) | 1080.13 | 11/2 <sup>(+)</sup> | (E2)               | 0.00339          | $\alpha(\text{K})=0.00290$ 4; $\alpha(\text{L})=0.000386$ 6; $\alpha(\text{M})=7.78\times 10^{-5}$ 11<br>$\alpha(\text{N})=1.565\times 10^{-5}$ 22; $\alpha(\text{O})=1.79\times 10^{-6}$ 3<br>E <sub><math>\gamma</math></sub> : weighted average of 711.0 3 from 1977Ha36 and 711.0 2 from 1993Go04.<br>I <sub><math>\gamma</math></sub> : weighted average of 20 3 from 1977Ha36 (22 MeV), 19 3 from 1977Ha36 (27 MeV), and 28 4 from 1993Go04.<br>Mult.: M1,E2 from $\alpha(\text{K})_{\text{exp}}=0.0043$ 15, E2 preferred by $A_2=+0.40$ 6, $A_4=+0.01$ 9 (1977Ha36).                                                |
| 715.20 10             | 52 9                | 1871.38             | 17/2 <sup>+</sup>    | 1156.19 | 13/2 <sup>+</sup>   | E2                 | 0.00334          | $\alpha(\text{K})=0.00286$ 4; $\alpha(\text{L})=0.000380$ 6; $\alpha(\text{M})=7.66\times 10^{-5}$ 11<br>$\alpha(\text{N})=1.541\times 10^{-5}$ 22; $\alpha(\text{O})=1.768\times 10^{-6}$ 25<br>E <sub><math>\gamma</math></sub> : weighted average of 715.20 10 from 1977Ha36 and 715.2 1 from 1993Go04.<br>I <sub><math>\gamma</math></sub> : unweighted average of 37 4 from 1977Ha36 (22 MeV), 54 3 from 1977Ha36 (27 MeV), and 66 3 from 1993Go04.<br>Mult.: $\alpha(\text{K})_{\text{exp}}=0.0032$ 7, $A_2=+0.35$ 6, $A_4=-0.01$ 9 (1977Ha36), $A_2=+0.40$ 7, $A_4=-0.04$ 7 (1993Go04).                             |
| 717.9 2               | 11 4                | 1690.30             | 15/2 <sup>+</sup>    | 972.42  | 11/2 <sup>+</sup>   |                    |                  | E <sub><math>\gamma</math></sub> : weighted average of 717.9 3 from 1977Ha36 and 717.9 2 from 1993Go04.<br>I <sub><math>\gamma</math></sub> : unweighted average of 6.0 12 from 1977Ha36 (22 MeV), 10.0 20 from 1977Ha36 (27 MeV), and 18 3 from 1993Go04.                                                                                                                                                                                                                                                                                                                                                                 |
| 766.5 <sup>c</sup> 3  | 20 <sup>c</sup> 3   | 1437.42             | 13/2 <sup>(+)</sup>  | 671.01  | 9/2 <sup>+</sup>    | Q                  |                  | E <sub><math>\gamma</math></sub> , Mult.: Doublet with 766.5 $\gamma$ from 2082 level. Evidence from coincidence. Mult assignment was done with sum of the doublet peaks (1993Go04). This placement is not reported by 1977Ha36, from which it is instead placed from a tentative level at E=766.5 that is not adopted.<br>I <sub><math>\gamma</math></sub> : from 1993Go04. Other: 16 3 for a 766.5 $\gamma$ placed from a tentative level at E=766.5 in 1977Ha36 (27 MeV); 23 for the double from 1977Ha36 (22 MeV).<br>Mult.: $A_2=+0.32$ 3, $A_4=-0.17$ 8 (1977Ha36), $A_2=+0.32$ 10, $A_4=-0.06$ 13, for the doublet. |
| 766.5 <sup>c</sup> 3  | 7 <sup>c</sup> 2    | 2081.98             | 17/2 <sup>(+)</sup>  | 1315.51 | 13/2 <sup>+</sup>   | (Q)                |                  | E <sub><math>\gamma</math></sub> , Mult.: Evidence from coincidence. Mult assignment was done with sum of the doublet peaks (1977Ha36, 1993Go04).<br>I <sub><math>\gamma</math></sub> : unweighted average of 5 1 from 1977Ha36 (27 MeV) and 9.0 18 from                                                                                                                                                                                                                                                                                                                                                                   |

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<sup>121</sup>Sb( $\alpha$ ,2n $\gamma$ ) [1993Go04](#),[1977Ha36](#) (continued)

$\gamma(^{123}\text{I})$  (continued)

| $E_\gamma$ <sup>‡</sup> | $I_\gamma$ <sup>#</sup> | $E_i$ (level) | $J_i^\pi$            | $E_f$   | $J_f^\pi$            | Mult. <sup>a</sup> | $\alpha$ <sup>†</sup> | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|-------------------------|---------------|----------------------|---------|----------------------|--------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         |                         |               |                      |         |                      |                    |                       | <a href="#">1993Go04</a> . Other: 23 4 for the doublet.<br>A <sub>2</sub> =+0.32 3, A <sub>4</sub> =-0.17 8 ( <a href="#">1977Ha36</a> ), A <sub>2</sub> =+0.32 10, A <sub>4</sub> =-0.06 13 ( <a href="#">1993Go04</a> ),<br>for the doublet.                                                                                                                                                                                                                                                                        |
| 782.4 2                 | 36 5                    | 1576.58       | 15/2 <sup>(+)</sup>  | 794.11  | 11/2 <sup>+</sup>    | Q                  | 0.0027                | E <sub><math>\gamma</math></sub> : weighted average of 782.5 3 from <a href="#">1977Ha36</a> and 782.4 2 from <a href="#">1993Go04</a> .<br>I <sub><math>\gamma</math></sub> : unweighted average of 30 4 from <a href="#">1977Ha36</a> (22 MeV), 34 4 from <a href="#">1977Ha36</a><br>(27 MeV), and 45 3 from <a href="#">1993Go04</a> .<br>Mult.: A <sub>2</sub> =+0.31 3, A <sub>4</sub> =-0.00 9 ( <a href="#">1977Ha36</a> ), A <sub>2</sub> =+0.33 4, A <sub>4</sub> =+0.00 6<br>( <a href="#">1993Go04</a> ). |
| 810.5@ 3                | 4.0@ 8                  | 2500.9        | 19/2 <sup>(+)</sup>  | 1690.30 | 15/2 <sup>+</sup>    |                    |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 812.6 2                 | 12 2                    | 2265.65       | (17/2 <sup>-</sup> ) | 1453.04 | 15/2 <sup>-</sup>    | D+Q                |                       | E <sub><math>\gamma</math></sub> : weighted average of 812.5 3 from <a href="#">1977Ha36</a> and 812.7 2 from <a href="#">1993Go04</a> .<br>I <sub><math>\gamma</math></sub> : weighted average of 13.0 25 from <a href="#">1977Ha36</a> (27 MeV) and 11.0 22 from<br><a href="#">1993Go04</a> .<br>Mult.: A <sub>2</sub> =-0.87 22 ( <a href="#">1977Ha36</a> ).                                                                                                                                                     |
| 840.6 2                 | 21 3                    | 2712.0        | 21/2 <sup>(+)</sup>  | 1871.38 | 17/2 <sup>+</sup>    | (Q)                |                       | E <sub><math>\gamma</math></sub> : weighted average of 840.6 3 from <a href="#">1977Ha36</a> and 840.6 2 from <a href="#">1993Go04</a> .<br>I <sub><math>\gamma</math></sub> : weighted average of 19 3 from <a href="#">1977Ha36</a> (27 MeV), and 24 4 from<br><a href="#">1993Go04</a> . Other: 5 1 from <a href="#">1977Ha36</a> (22 MeV) seems discrepant.<br>Mult.: A <sub>2</sub> =+0.33 4 ( <a href="#">1977Ha36</a> ), A <sub>2</sub> =+0.29 9, A <sub>4</sub> =+0.09 13 ( <a href="#">1993Go04</a> ).       |
| 845@ 1                  | 10@ 2                   | 2282.4?       | (17/2 <sup>+</sup> ) | 1437.42 | 13/2 <sup>(+)</sup>  |                    |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 856.3@ 2                | 15@ 3                   | 2647.4        | (19/2 <sup>+</sup> ) | 1791.1  | (15/2 <sup>+</sup> ) | (Q)                |                       | Mult.: A <sub>2</sub> =+0.35 10 from <a href="#">1993Go04</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 889.6 2                 | 12 3                    | 2466.2        | 19/2 <sup>(+)</sup>  | 1576.58 | 15/2 <sup>(+)</sup>  | Q                  |                       | $\alpha$ (K)=0.00171; $\alpha$ (L)=0.00022<br>E <sub><math>\gamma</math></sub> : weighted average of 889.6 3 from <a href="#">1977Ha36</a> and 889.6 2 from <a href="#">1993Go04</a> .<br>I <sub><math>\gamma</math></sub> : unweighted average of 7.0 14 from <a href="#">1977Ha36</a> (22 MeV), 11.0 22 from<br><a href="#">1977Ha36</a> (27 MeV), and 17 3 from <a href="#">1993Go04</a> .<br>Mult.: A <sub>2</sub> =+0.52 5 ( <a href="#">1977Ha36</a> ), A <sub>2</sub> =+0.40 10 ( <a href="#">1993Go04</a> ).  |
| 898.5@ 3                | @                       | 3512.3        | (27/2 <sup>-</sup> ) | 2613.84 | 23/2 <sup>-</sup>    | (Q)                |                       | Mult.: A <sub>2</sub> =+0.24 12 from <a href="#">1993Go04</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 908.0 3                 | 6.0 12                  | 2947.8        | (21/2 <sup>-</sup> ) | 2039.76 | 19/2 <sup>-</sup>    | (D+Q)              |                       | E <sub><math>\gamma</math></sub> : weighted average of 907.8 3 from <a href="#">1977Ha36</a> and 908.2 3 from <a href="#">1993Go04</a> .<br>I <sub><math>\gamma</math></sub> : weighted average of 6.0 12 from <a href="#">1977Ha36</a> (27 MeV) and 6.0 12 from<br><a href="#">1993Go04</a> .<br>Mult.: A <sub>2</sub> =-1.1 2 ( <a href="#">1977Ha36</a> ).                                                                                                                                                         |
| 919.0@ 3                | 8.0@ 16                 | 2790.4        |                      | 1871.38 | 17/2 <sup>+</sup>    |                    |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 943@d 1                 | 4.0@ 8                  | 3409?         |                      | 2466.2  | 19/2 <sup>(+)</sup>  |                    |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 985@d 1                 | 4.0@ 8                  | 3697?         |                      | 2712.0  | 21/2 <sup>(+)</sup>  |                    |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 990.7@ 3                | 8.0@ 16                 | 2567.3        |                      | 1576.58 | 15/2 <sup>(+)</sup>  |                    |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

<sup>†</sup> Additional information 3.

<sup>‡</sup> From [1977Ha36](#) and [1993Go04](#), weighted average taken where available, unless otherwise noted. No uncertainties are given in [1977Ha36](#) and [1993Go04](#). From a general statement in [1977Ha36](#) and [1993Go04](#) that uncertainties are 0.05-0.3 keV ([1977Ha36](#)) and 0.1-0.3 keV ([1993Go04](#)), respectively, depending on intensities, the evaluator has assigned uncertainty for each E <sub>$\gamma$</sub>  value as follows: 0.05 keV for I <sub>$\gamma$</sub> >=80 ([1977Ha36](#) only), 0.1 keV for I <sub>$\gamma$</sub> >=50, 0.2 keV for I <sub>$\gamma$</sub> >=10, and 0.3 keV for I <sub>$\gamma$</sub> <10, except in a few cases from [1993Go04](#) where energy values are quoted to the nearest keV for which 1 keV is assigned as

$\gamma(^{123}\text{I})$  (continued)

uncertainty (by 1993Go04) and in some cases from 1977Ha36 where energy values are quoted to the nearest hundredth keV but  $I_\gamma < 10$  and to the nearest tenth keV, for which 0.20 keV and 0.3 keV is assigned, respectively (by the evaluator).

# From 1977Ha36 (beam energy=27 MeV and 22 MeV) and 1993Go04 (beam energy=30 MeV), weighted (or unweighted) average taken where available, unless otherwise noted. No uncertainties are given in 1977Ha36 and 1993Go04. From a general statement that uncertainties are 5% to 20% 1993Go04 and 1977Ha36, the evaluator has assigned uncertainty for each in both  $I_\gamma$  value as follows: 5% for  $I_\gamma > 50$ , 20% for  $I_\gamma \leq 10$ , and values linearly varying between 5% and 20% for the others.

@ From 1993Go04 only.

& Influenced or obscured by impurity lines.

<sup>a</sup> From  $\alpha(K)\text{exp}$  and  $\gamma(\theta)$  in 1977Ha36 and  $\gamma(\theta)$  in 1993Go04, unless otherwise noted. The  $\alpha(K)\text{exp}$  are based on relative  $I_\gamma$  and  $I(\text{ce})$  data normalized to  $\alpha(K)\text{exp}(138\gamma) = 0.261$  for  $\text{Mult}(138\gamma) = \text{M1}$  from 1977Ha36 and this normalization is still valid within the uncertainty for adopted  $\text{Mult} = \text{M1} + \text{E2}$  with  $\delta(\text{E2}/\text{M1}) = -0.155$ , for which  $\alpha(K) = 0.2624$  calculated using the BrIcc code.

<sup>b</sup> From  $\gamma(\theta)$  in 1993Go04, unless otherwise noted.

<sup>c</sup> Multiply placed with intensity suitably divided.

<sup>d</sup> Placement of transition in the level scheme is uncertain.



$^{121}\text{Sb}(\alpha,2n\gamma)$  1993Go04,1977Ha36

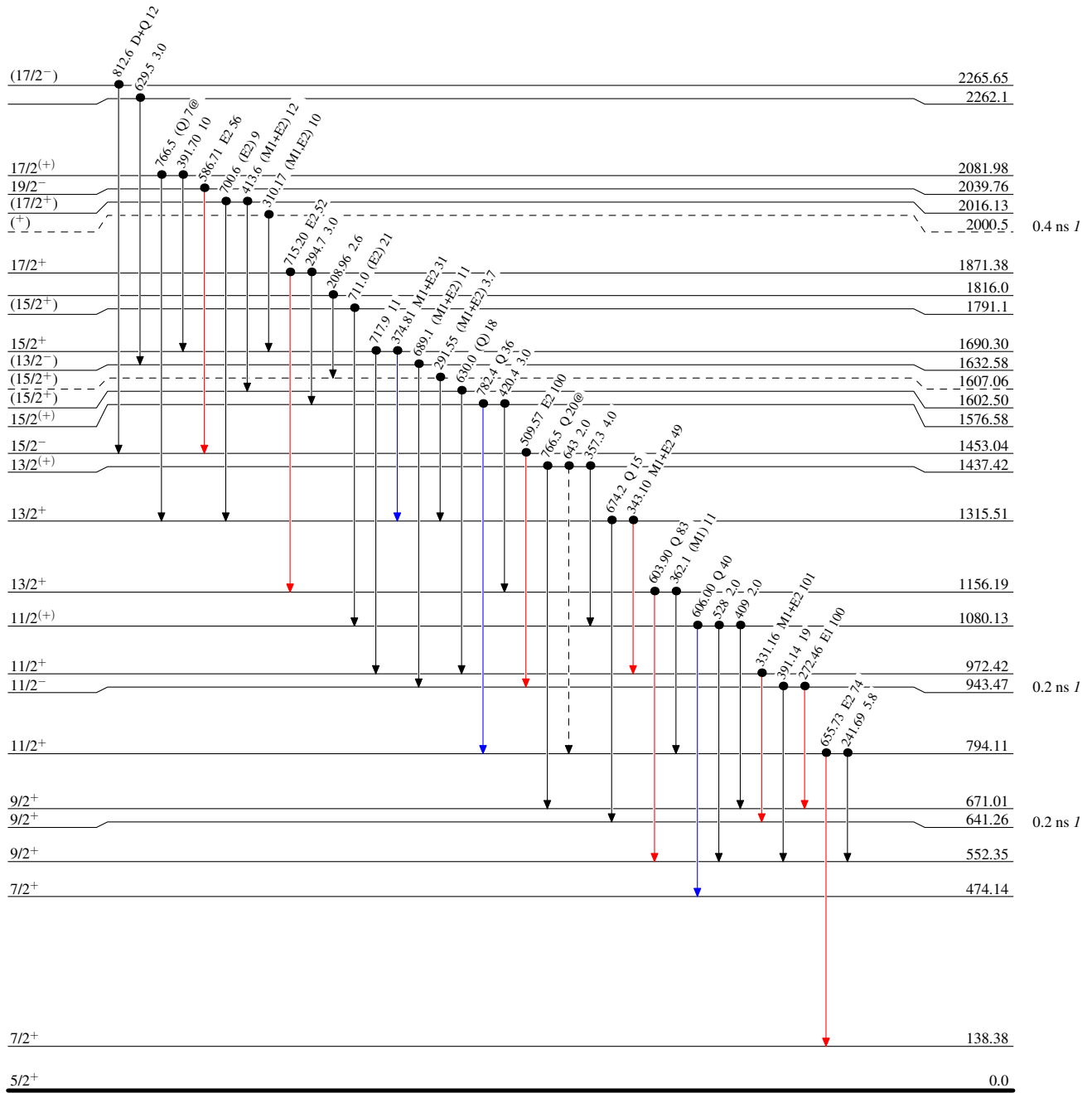
Level Scheme (continued)

Intensities: Relative  $I_\gamma$

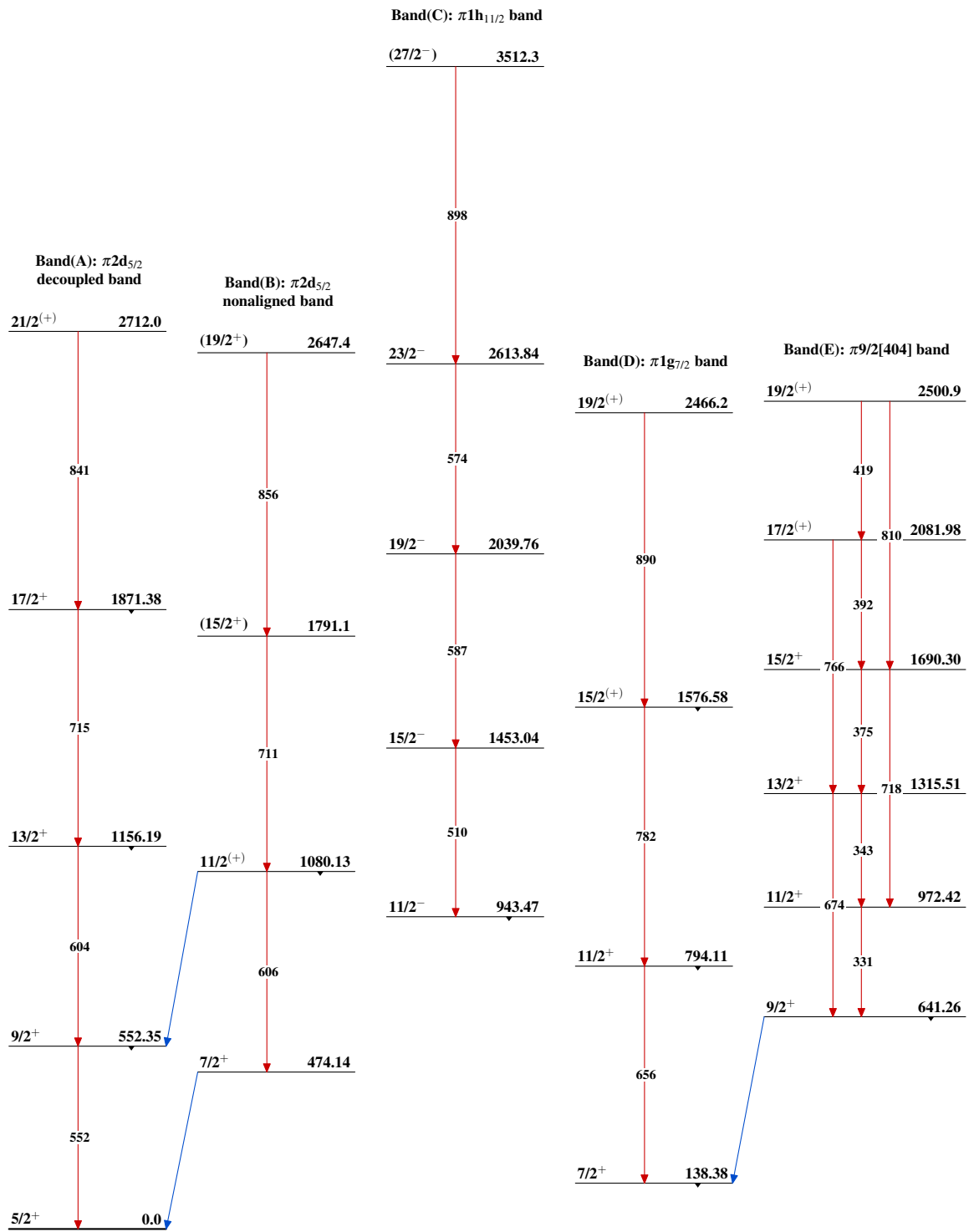
@ Multiply placed: intensity suitably divided

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- - - →  $\gamma$  Decay (Uncertain)
- Coincidence





$^{121}\text{Sb}(\alpha,2n\gamma)$  1993Go04,1977Ha36 $^{123}_{53}\text{I}_{70}$