

⁹⁴Mo(⁴⁰Ca,2p2n γ) **2001Ha03**

| Type | Author | History Citation | Literature Cutoff Date |
|-----------------|--------------|-------------------|------------------------|
| Full Evaluation | Balraj Singh | NDS 93, 33 (2001) | 11-May-2001 |

2001Ha03: Measured E γ , I γ , $\gamma\gamma$ and $\gamma\gamma(\theta)$ (DCO) using GAMMASPHERE spectrometer in conjunction with Microball.

¹³⁰Nd Levels

| E(level) [†] | J π | E(level) [†] | J π | E(level) [†] | J π | E(level) [†] | J π |
|-----------------------|--------------------|---------------------------|--------------------|----------------------------|--------------------|-----------------------------|--------------------|
| 0.0 | | 3133.1 [#] 8 | 11 ⁽⁻⁾ | 5581.8 [@] 12 | (18 ⁺) | 8978.5 [#] 18 | 25 ⁽⁻⁾ |
| 158.6 [‡] 5 | 2 ⁺ | 3468.1 [‡] 7 | 14 ⁺ | 5918.3 [‡] 10 | 20 ⁺ | 9167.5 [‡] 14 | 26 ⁺ |
| 484.8 [‡] 6 | 4 ⁺ | 3578.1 [@] 8 | (12 ⁺) | 6020.7 [#] 13 | 19 ⁽⁻⁾ | 9476.4 ^{?&} 18 | (25 ⁻) |
| 939.1 [‡] 6 | 6 ⁺ | 3764.6 [#] 10 | 13 ⁽⁻⁾ | 6359.9 ^{&} 10 | (19 ⁻) | 9518.3 [@] 18 | (26 ⁺) |
| 1486.6 [‡] 6 | 8 ⁺ | 3858.3 ^{&} 8 | (13 ⁻) | 6406.0 [@] 13 | (20 ⁺) | 10120.5 [#] 21 | 27 ⁽⁻⁾ |
| 1825.0 [#] 7 | (5 ⁻) | 4177.1 [@] 10 | (14 ⁺) | 6909.2 [‡] 12 | 22 ⁺ | 10425.5 [‡] 17 | 28 ⁺ |
| 2099.9 [‡] 7 | 10 ⁺ | 4211.6 [‡] 8 | 16 ⁺ | 6910.3 [#] 14 | 21 ⁽⁻⁾ | 10756.3 ^{?@} 21 | (28 ⁺) |
| 2143.9 [#] 7 | 7 ⁽⁻⁾ | 4462.9 [#] 11 | 15 ⁽⁻⁾ | 7334.4 [@] 14 | (22 ⁺) | 11296.5 ^{?#} 23 | (29 ⁻) |
| 2294.3 8 | | 4585.3 ^{&} 8 | (15 ⁻) | 7340.3 ^{&} 11 | (21 ⁻) | 11745.5 [‡] 20 | 30 ⁺ |
| 2586.8 [#] 7 | 9 ⁽⁻⁾ | 4845.4 [@] 11 | (16 ⁺) | 7896.5 [#] 15 | 23 ⁽⁻⁾ | 13080.6 ^{?‡} 22 | (32 ⁺) |
| 2689.6 [@] 7 | (8 ⁺) | 5020.9 [‡] 9 | 18 ⁺ | 7993.9 [‡] 13 | 24 ⁺ | | |
| 2763.9 [‡] 7 | 12 ⁺ | 5213.5 [#] 12 | 17 ⁽⁻⁾ | 8372.3 [@] 15 | (24 ⁺) | | |
| 3076.1 [@] 8 | (10 ⁺) | 5435.1 ^{&} 8 | (17 ⁻) | 8375.3 ^{&} 15 | (23 ⁻) | | |

[†] From least-squares fit to E γ 's.

[‡] Band(A): g.s. Band.

[#] Band(B): Band based on (5⁻). possible configuration=ED= $\nu[7/2[523],\alpha=-1/2]\nu[1/2[411],\alpha=-1/2]$.

[@] Band(C): Band based on (8⁺). possible configuration=EH= $\nu[7/2[523],\alpha=-1/2]\nu[1/2[541],\alpha=+1/2]$.

[&] Band(D): Band based on (13⁻).

$\gamma(^{130}\text{Nd})$

| E γ [†] | I γ | E _i (level) | J π _i | E _f | J π _f | Mult. | Comments |
|-------------------------|------------|------------------------|----------------------|---------------------------|----------------------|-------|-------------|
| 158.6 5 | | 158.6 | 2 ⁺ | 0.0 | | Q | DCO=0.98 4. |
| 318.4 5 | 2.7 2 | 2143.9 | 7 ⁽⁻⁾ | 1825.0 (5 ⁻) | | | |
| 326.2 2 | 100 | 484.8 | 4 ⁺ | 158.6 2 ⁺ | | Q | DCO=1.02 2. |
| 373.8 5 | 1.1 1 | 4585.3 | (15 ⁻) | 4211.6 16 ⁺ | | | |
| 386.7 5 | 4.7 4 | 3076.1 | (10 ⁺) | 2689.6 (8 ⁺) | | | |
| 390.1 5 | 1.7 2 | 3858.3 | (13 ⁻) | 3468.1 14 ⁺ | | | |
| 395.2 5 | 1.5 2 | 2689.6 | (8 ⁺) | 2294.3 | | | |
| 442.9 2 | 10.2 6 | 2586.8 | 9 ⁽⁻⁾ | 2143.9 7 ⁽⁻⁾ | | Q | DCO=0.96 9. |
| 444.7 5 | 1.5 2 | 3578.1 | (12 ⁺) | 3133.1 11 ⁽⁻⁾ | | | |
| 454.3 2 | 92 4 | 939.1 | 6 ⁺ | 484.8 4 ⁺ | | Q | DCO=1.02 2. |
| 486.7 5 | 4.5 4 | 2586.8 | 9 ⁽⁻⁾ | 2099.9 10 ⁺ | | D | DCO=0.5 1. |
| 489.5 5 | 1.4 2 | 3076.1 | (10 ⁺) | 2586.8 9 ⁽⁻⁾ | | | |
| 502.3 5 | 6.7 6 | 3578.1 | (12 ⁺) | 3076.1 (10 ⁺) | | | |
| 545.9 5 | 1.3 2 | 2689.6 | (8 ⁺) | 2143.9 7 ⁽⁻⁾ | | | |
| 546.0 5 | 8.8 8 | 3133.1 | 11 ⁽⁻⁾ | 2586.8 9 ⁽⁻⁾ | | Q | DCO=1.0 1. |
| 547.5 2 | 77 3 | 1486.6 | 8 ⁺ | 939.1 6 ⁺ | | Q | DCO=0.95 3. |
| 599.0 5 | 5.3 5 | 4177.1 | (14 ⁺) | 3578.1 (12 ⁺) | | | |
| 613.2 2 | 54 3 | 2099.9 | 10 ⁺ | 1486.6 8 ⁺ | | Q | DCO=1.00 3. |

Continued on next page (footnotes at end of table)

$^{94}\text{Mo}(^{40}\text{Ca},2\text{p}2\text{n}\gamma)$ **2001Ha03** (continued) $\gamma(^{130}\text{Nd})$ (continued)

| E_γ^\dagger | I_γ | $E_i(\text{level})$ | J_i^π | E_f | J_f^π | Mult. | Comments |
|--------------------|------------|---------------------|------------|---------|------------|-------|-------------|
| 631.5 | 5 7.3 | 6 3764.6 | $13^{(-)}$ | 3133.1 | $11^{(-)}$ | Q | DCO=1.0 1. |
| 657.5 | 5 9.6 | 6 2143.9 | $7^{(-)}$ | 1486.6 | 8^+ | D | DCO=0.55 5. |
| 664.0 | 2 38 | 2 2763.9 | 12^+ | 2099.9 | 10^+ | Q | DCO=1.00 4. |
| 668.3 | 5 4.6 | 4 4845.4 | (16^+) | 4177.1 | (14^+) | | |
| 698.3 | 5 5.6 | 4 4462.9 | $15^{(-)}$ | 3764.6 | $13^{(-)}$ | | |
| 704.2 | 2 26 | 1 3468.1 | 14^+ | 2763.9 | 12^+ | Q | DCO=1.03 5. |
| 727.1 | 5 1.4 | 2 4585.3 | (15^-) | 3858.3 | (13^-) | | |
| 736.4 | 5 2.8 | 3 5581.8 | (18^+) | 4845.4 | (16^+) | | |
| 743.5 | 2 14.8 | 8 4211.6 | 16^+ | 3468.1 | 14^+ | Q | DCO=1.00 9. |
| 750.6 | 5 4.9 | 4 5213.5 | $17^{(-)}$ | 4462.9 | $15^{(-)}$ | | |
| 807.2 | 5 2.4 | 3 6020.7 | $19^{(-)}$ | 5213.5 | $17^{(-)}$ | | |
| 809.3 | 5 9.3 | 6 5020.9 | 18^+ | 4211.6 | 16^+ | Q | DCO=0.9 1. |
| 824.2 | 5 2.0 | 2 6406.0 | (20^+) | 5581.8 | (18^+) | | |
| 850.0 | 5 2.2 | 2 5435.1 | (17^-) | 4585.3 | (15^-) | | |
| 885.5 | 5 3.0 | 4 1825.0 | (5^-) | 939.1 | 6^+ | | |
| 889.6 | 5 1.3 | 2 6910.3 | $21^{(-)}$ | 6020.7 | $19^{(-)}$ | | |
| 897.4 | 5 5.2 | 4 5918.3 | 20^+ | 5020.9 | 18^+ | Q | DCO=1.1 1. |
| 924.8 | 5 1.8 | 2 6359.9 | (19^-) | 5435.1 | (17^-) | | |
| 928.4 | 5 1.1 | 1 7334.4 | (22^+) | 6406.0 | (20^+) | | |
| 980.4 | 5 1.1 | 1 7340.3 | (21^-) | 6359.9 | (19^-) | | |
| 986.2 | 5 0.6 | 1 7896.5 | $23^{(-)}$ | 6910.3 | $21^{(-)}$ | | |
| 990.9 | 5 2.7 | 3 6909.2 | 22^+ | 5918.3 | 20^+ | | |
| 1035 | 1 <0.5 | 8375.3 | (23^-) | 7340.3 | (21^-) | | |
| 1037.9 | 5 0.6 | 1 8372.3 | (24^+) | 7334.4 | (22^+) | | |
| 1082 | 1 <0.5 | 8978.5 | $25^{(-)}$ | 7896.5 | $23^{(-)}$ | | |
| 1084.7 | 5 1.4 | 2 7993.9 | 24^+ | 6909.2 | 22^+ | | |
| 1094.7 | 5 2.0 | 2 3858.3 | (13^-) | 2763.9 | 12^+ | | |
| 1100.0 | 5 2.7 | 3 2586.8 | $9^{(-)}$ | 1486.6 | 8^+ | | |
| 1101 [#] | 1 <0.5 | 9476.4? | (25^-) | 8375.3 | (23^-) | | |
| 1117.3 | 5 1.7 | 2 4585.3 | (15^-) | 3468.1 | 14^+ | | |
| 1142 | 1 <0.5 | 10120.5 | $27^{(-)}$ | 8978.5 | $25^{(-)}$ | | |
| 1146 | 1 <0.5 | 9518.3 | (26^+) | 8372.3 | (24^+) | | |
| 1173.6 | 5 0.6 | 1 9167.5 | 26^+ | 7993.9 | 24^+ | | |
| 1176 [#] | 1 <0.5 | 11296.5? | (29^-) | 10120.5 | $27^{(-)}$ | | |
| 1203.0 | 5 1.7 | 2 2689.6 | (8^+) | 1486.6 | 8^+ | | |
| 1205.4 | 5 1.0 | 1 2143.9 | $7^{(-)}$ | 939.1 | 6^+ | | |
| 1223.3 | 5 1.0 | 1 5435.1 | (17^-) | 4211.6 | 16^+ | | |
| 1238 [#] | 1 <0.5 | 10756.3? | (28^+) | 9518.3 | (26^+) | | |
| 1258 | 1 <0.5 | 10425.5 | 28^+ | 9167.5 | 26^+ | | |
| 1320 | 1 <0.5 | 11745.5 | 30^+ | 10425.5 | 28^+ | | |
| 1335 [#] | 1 <0.5 | 13080.6? | (32^+) | 11745.5 | 30^+ | | |
| 1355 [‡] | 1 2294.3 | | | 939.1 | 6^+ | | |

[†] $\Delta(E_\gamma)=0.2$ keV for $I_\gamma>10$, $\Delta(E_\gamma)=0.5$ keV for $I_\gamma<10$ and 1 keV for others, based on a general statement by 2001Ha03.

[‡] From Figure 1 of 2001Ha03.

[#] Placement of transition in the level scheme is uncertain.

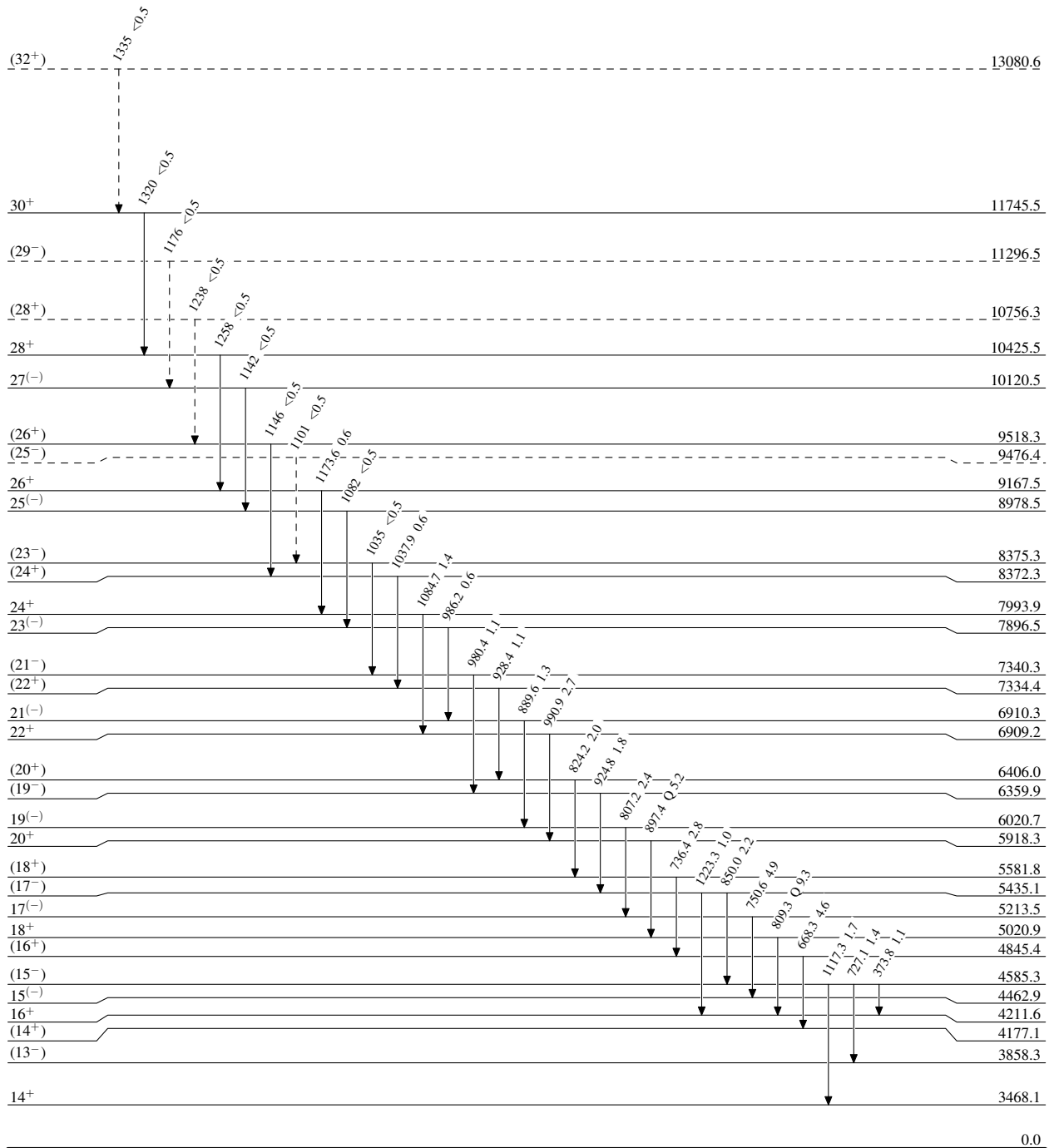
$^{94}\text{Mo} (^{40}\text{Ca}, 2p2n\gamma)$ 2001Ha03

Legend

Level Scheme

Intensities: Relative I_γ

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



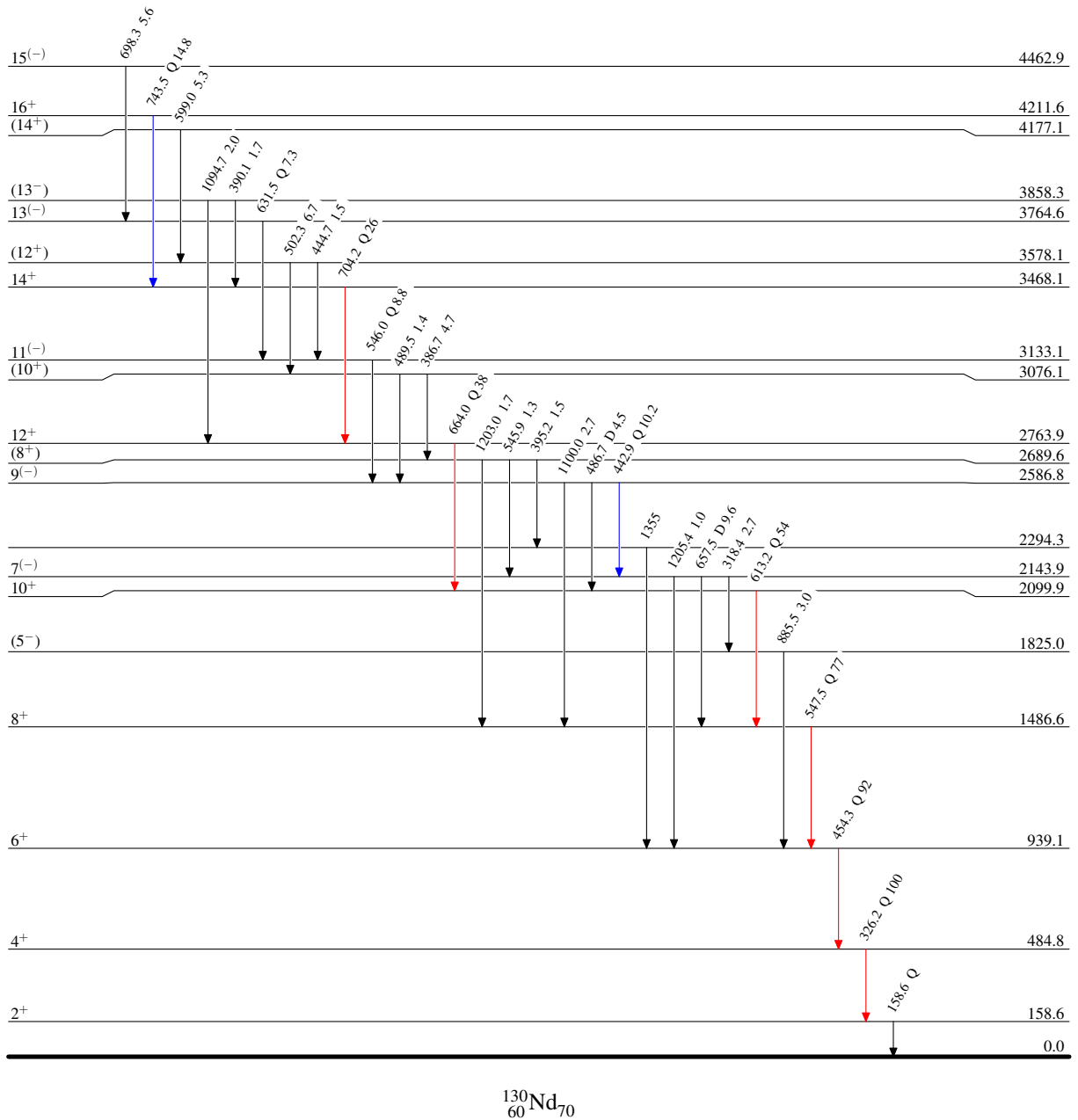
$^{94}\text{Mo} (^{40}\text{Ca}, 2p2n\gamma) \quad 2001\text{Ha03}$

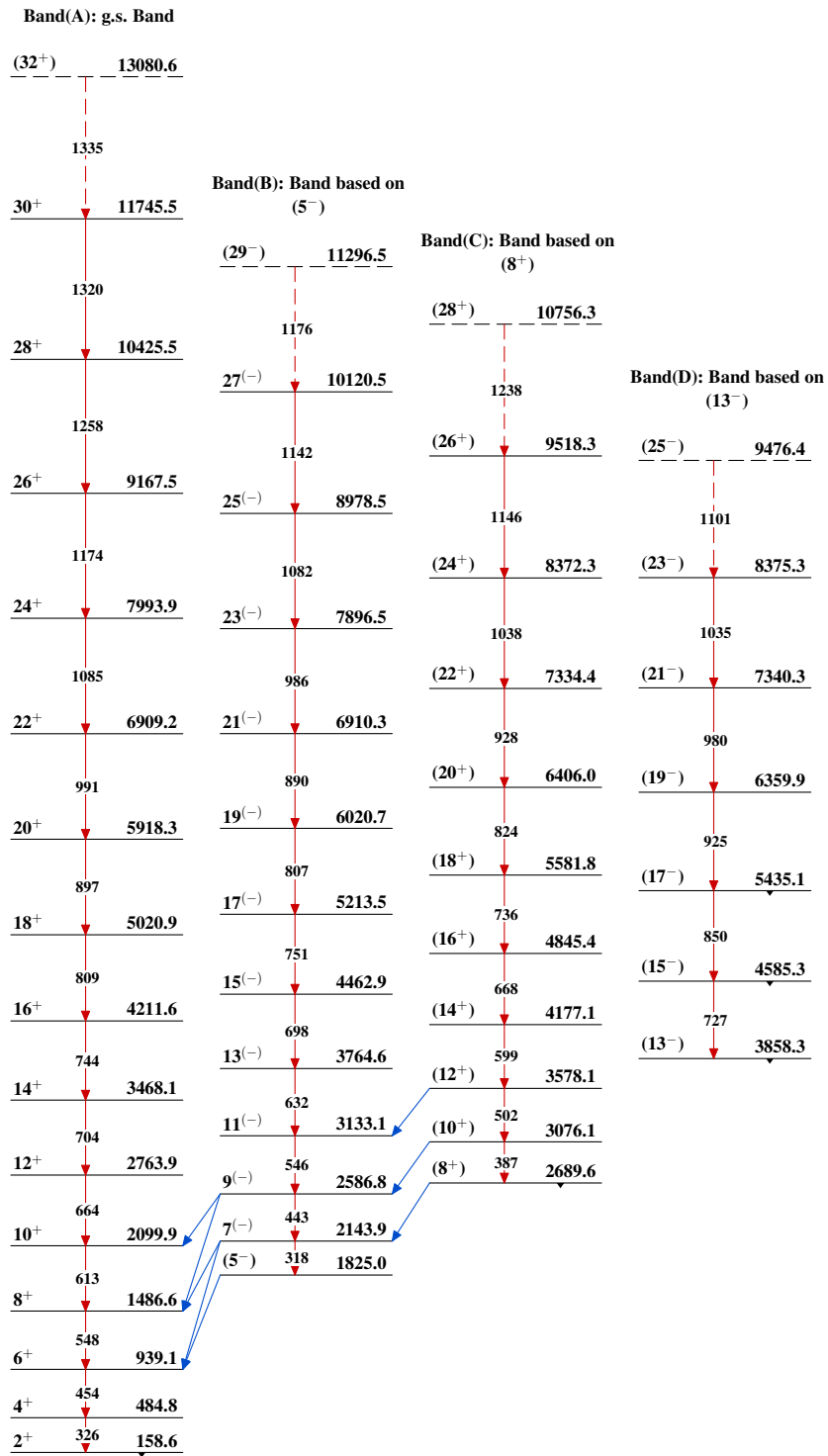
Level Scheme (continued)

Intensities: Relative I_γ

Legend

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

 $^{130}\text{Nd}_{70}$

$^{94}\text{Mo} (^{40}\text{Ca}, 2p2n\gamma) \quad 2001\text{Ha03}$  $^{130}_{60}\text{Nd}_{70}$