

TAVOLA PERIODICA DEI NUCLEI ATOMICI

configurazione dei livelli nucleari degli isotopi **GADOLINIO** **Z = 64-a**

| $\frac{E_c(\text{MeV})}{E_s(\text{MeV})}$ | Sa | $\frac{m_c}{m_s}$ | n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | $\frac{E_p(\text{eV})}{p-T_{1/2}}$ |
|---|---------------------------------|--------------------------------|-----|-----|-----|------|------|------|-----|-----|------------------------------------|
| $\frac{1073.51}{1073.1}$ | Gd ¹³⁴ ₆₄ | $\frac{133.95489}{133.95537}$ | 64n | 2+0 | 8+0 | 18+0 | 18+0 | 12+4 | 0+2 | 0+0 | $\frac{8.700M}{ce400ms}$ |
| $\frac{1083.98}{1083.7}$ | Gd ¹³⁵ ₆₄ | $\frac{134.95231}{134.95257}$ | 64n | 2+0 | 8+0 | 18+0 | 19+0 | 10+5 | 0+2 | 0+0 | $\frac{10.10M}{ce1.10s}$ |
| $\frac{1096.05}{1096.7}$ | Gd ¹³⁶ ₆₄ | $\frac{135.94802}{135.94734}$ | 64n | 2+0 | 8+0 | 18+0 | 20+0 | 7+7 | 1+1 | 0+0 | $\frac{7.200M}{ce \geq 200ns}$ |
| $\frac{1106.52}{1106.9}$ | Gd ¹³⁷ ₆₄ | $\frac{136.94544}{136.94502}$ | 64n | 2+0 | 8+0 | 18+0 | 21+0 | 5+8 | 1+1 | 0+0 | $\frac{8.800M}{ce2.20s}$ |
| $\frac{1120.21}{1119.6}$ | Gd ¹³⁸ ₆₄ | $\frac{137.93941}{137.94012}$ | 64n | 2+0 | 8+0 | 18+0 | 22+0 | 3+10 | 1+0 | 0+0 | $\frac{6.090M}{ce4.70s}$ |
| $\frac{1129.06}{1129.4}$ | Gd ¹³⁹ ₆₄ | $\frac{138.93858}{138.93824}$ | 64n | 2+0 | 8+0 | 18+0 | 23+0 | 2+10 | 0+1 | 0+0 | $\frac{7.770M}{ce5.80s}$ |
| $\frac{1141.13}{1141.7}$ | Gd ¹⁴⁰ ₆₄ | $\frac{139.93428}{139.93367}$ | 64n | 2+0 | 8+0 | 18+0 | 22+1 | 1+11 | 1+0 | 0+0 | $\frac{5.200M}{ce15.8s}$ |
| $\frac{1151.60}{1151.2}$ | Gd ¹⁴¹ ₆₄ | $\frac{140.93171}{140.932126}$ | 64n | 2+0 | 8+0 | 18+0 | 21+2 | 1+11 | 1+0 | 0+0 | $\frac{6.701M}{ce14.0s}$ |
| $\frac{1163.42}{1163.0}$ | Gd ¹⁴² ₆₄ | $\frac{141.92768}{141.92812}$ | 64n | 2+0 | 8+0 | 18+0 | 21+3 | 1+10 | 0+1 | 0+0 | $\frac{4.350M}{ce70.2s}$ |
| $\frac{1172.52}{1172.4}$ | Gd ¹⁴³ ₆₄ | $\frac{142.92658}{142.92675}$ | 64n | 2+0 | 8+0 | 18+0 | 19+4 | 1+11 | 1+0 | 0+0 | $\frac{6.010M}{ce39.0s}$ |
| $\frac{1184.34}{1184.0}$ | Gd ¹⁴⁴ ₆₄ | $\frac{143.92255}{143.92296}$ | 64n | 2+0 | 8+0 | 18+0 | 19+5 | 1+10 | 0+1 | 0+0 | $\frac{3.860M}{ce4.47m}$ |
| $\frac{1193.44}{1193.2}$ | Gd ¹⁴⁵ ₆₄ | $\frac{144.92145}{144.921709}$ | 64n | 2+0 | 8+0 | 18+0 | 17+6 | 1+11 | 1+0 | 0+0 | $\frac{5.065M}{ce23.0m}$ |
| $\frac{1203.91}{1204.4}$ | Gd ¹⁴⁶ ₆₄ | $\frac{145.91888}{145.918311}$ | 64n | 2+0 | 8+0 | 18+0 | 16+7 | 1+11 | 1+0 | 0+0 | $\frac{1.030M}{ce48.27d}$ |
| $\frac{1211.40}{1211.8}$ | Gd ¹⁴⁷ ₆₄ | $\frac{146.91950}{146.919094}$ | 64n | 2+0 | 8+0 | 18+0 | 16+7 | 0+12 | 1+0 | 0+0 | $\frac{2.187M}{ce38.06h}$ |
| $\frac{1220.25}{1220.8}$ | Gd ¹⁴⁸ ₆₄ | $\frac{147.91866}{147.918115}$ | 64n | 2+0 | 8+0 | 18+0 | 15+8 | 1+11 | 0+1 | 0+0 | $\frac{3.27121M}{\alpha 70.9a}$ |
| $\frac{1227.75}{1227.7}$ | Gd ¹⁴⁹ ₆₄ | $\frac{148.91928}{148.919341}$ | 64n | 2+0 | 8+0 | 18+0 | 15+8 | 0+12 | 0+1 | 0+0 | $\frac{1.313M}{ce9.28d}$ |

| $\frac{E_c(\text{MeV})}{E_s(\text{MeV})}$ | Sa | $\frac{m_c}{m_s}$ | n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | $\frac{E_p(\text{eV})}{p \cdot T_{1/2}}$ |
|---|---------------------------------|--------------------------------|-----|-----|-----|------|-------|------|-----|-----|---|
| $\frac{1236.85}{1236.4}$ | Gd ₆₄ ¹⁵⁰ | $\frac{149.91817}{149.918659}$ | 64n | 2+0 | 8+0 | 18+0 | 13+9 | 0+13 | 1+0 | 0+0 | $\frac{2.808M}{\alpha 1.79 \cdot 10^6 a}$ |
| $\frac{1242.74}{1242.9}$ | Gd ₆₄ ¹⁵¹ | $\frac{150.92051}{150.920348}$ | 64n | 2+0 | 8+0 | 18+0 | 13+9 | 0+13 | 0+1 | 0+0 | $\frac{464.0K}{ce 123.9d}$ |
| $\frac{1251.84}{1251.5}$ | Gd ₆₄ ¹⁵² | $\frac{151.91941}{151.919791}$ | 64n | 2+0 | 8+0 | 18+0 | 11+10 | 0+14 | 1+0 | 0+0 | $\frac{2.2044M}{\alpha 1.08 \cdot 10^{14} a}$ 0.20% |
| $\frac{1257.73}{1257.7}$ | Gd ₆₄ ¹⁵³ | $\frac{152.92175}{152.921749}$ | 64n | 2+0 | 8+0 | 18+0 | 11+10 | 0+14 | 0+1 | 0+0 | $\frac{484.0K}{ce 240.4d}$ |
| $\frac{1266.83}{1266.6}$ | Gd ₆₄ ¹⁵⁴ | $\frac{153.92065}{153.920866}$ | 64n | 2+0 | 8+0 | 18+0 | 9+11 | 0+15 | 1+0 | 0+0 | st 2.18% |
| $\frac{1272.98}{1273.1}$ | Gd ₆₄ ¹⁵⁵ | $\frac{154.92271}{154.922622}$ | 64n | 2+0 | 8+0 | 18+0 | 8+11 | 1+16 | 0+0 | 0+0 | st 14.80% |
| $\frac{1281.82}{1281.6}$ | Gd ₆₄ ¹⁵⁶ | $\frac{155.92188}{155.922123}$ | 64n | 2+0 | 8+0 | 18+0 | 7+12 | 0+16 | 1+0 | 0+0 | st 20.47% |
| $\frac{1287.97}{1288.0}$ | Gd ₆₄ ¹⁵⁷ | $\frac{156.92395}{156.923960}$ | 64n | 2+0 | 8+0 | 18+0 | 6+12 | 1+17 | 0+0 | 0+0 | st 15.65% |
| $\frac{1295.46}{1295.9}$ | Gd ₆₄ ¹⁵⁸ | $\frac{157.92457}{157.924104}$ | 64n | 2+0 | 8+0 | 18+0 | 6+12 | 0+18 | 0+0 | 0+0 | st 24.84% |
| $\frac{1301.34}{1301.8}$ | Gd ₆₄ ¹⁵⁹ | $\frac{158.92692}{158.926389}$ | 64n | 2+0 | 8+0 | 18+0 | 4+13 | 0+18 | 1+0 | 0+0 | $\frac{970.6K}{\beta^- 18.479h}$ |
| $\frac{1308.84}{1309.3}$ | Gd ₆₄ ¹⁶⁰ | $\frac{159.92754}{159.927054}$ | 64n | 2+0 | 8+0 | 18+0 | 2+14 | 1+18 | 1+0 | 0+0 | $\frac{1.7301M}{2\beta^- 3.1 \cdot 10^{19} a}$ 21.86 |
| $\frac{1314.72}{1314.9}$ | Gd ₆₄ ¹⁶¹ | $\frac{160.92989}{160.929669}$ | 64n | 2+0 | 8+0 | 18+0 | 2+14 | 1+18 | 0+1 | 0+0 | $\frac{1.9556M}{\beta^- 3.66m}$ |
| $\frac{1322.22}{1322.6}$ | Gd ₆₄ ¹⁶² | $\frac{161.93050}{161.930098}$ | 64n | 2+0 | 8+0 | 18+0 | 2+14 | 0+19 | 0+1 | 0+0 | $\frac{1.390M}{\beta^- 8.40m}$ |
| $\frac{1326.49}{1327.0}$ | Gd ₆₄ ¹⁶³ | $\frac{162.93458}{162.93399}$ | 64n | 2+0 | 8+0 | 18+0 | 0+15 | 1+18 | 0+2 | 0+0 | $\frac{3.120M}{\beta^- 68.0s}$ |
| $\frac{1333.72}{1333.4}$ | Gd ₆₄ ¹⁶⁴ | $\frac{163.93549}{163.93586}$ | 64n | 2+0 | 8+0 | 16+1 | 1+15 | 1+17 | 0+3 | 0+0 | $\frac{2.200M}{\beta^- 45.0s}$ |
| $\frac{1338.38}{1338.2}$ | Gd ₆₄ ¹⁶⁵ | $\frac{164.93915}{164.93938}$ | 64n | 2+0 | 8+0 | 16+1 | 0+16 | 0+16 | 0+4 | 1+0 | $\frac{4.100M}{\beta^- 10.3s}$ |

| $\frac{E_c(\text{MeV})}{E_s(\text{MeV})}$ | Sa | $\frac{m_c}{m_s}$ | n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | $\frac{E_p(\text{eV})}{p-T_{1/2}}$ |
|---|---------------------------------|--------------------------------|-----|-----|-----|------|------|------|-----|-----|------------------------------------|
| $\frac{1344.25}{1344.2}$ | Gd ₆₄ ¹⁶⁶ | $\frac{165.94151}{165.94160}$ | 64n | 2+0 | 8+0 | 14+2 | 0+16 | 0+16 | 1+4 | 1+0 | $\frac{3.400M}{\beta^- 4.80s}$ |
| $\frac{1348.51}{1348.5}$ | Gd ₆₄ ¹⁶⁷ | $\frac{166.94557}{166.94557}$ | 64n | 2+0 | 8+0 | 12+3 | 0+16 | 1+15 | 1+5 | 1+0 | $\frac{5.100M}{\beta^- 3s}$ |
| $\frac{1354.40}{1354.0}$ | Gd ₆₄ ¹⁶⁸ | $\frac{167.94795}{167.94836}$ | 64n | 2+0 | 8+0 | 12+3 | 0+16 | 1+15 | 0+6 | 1+0 | $\frac{4.300M}{\beta^- 300ms}$ |
| $\frac{1358.67}{1358.4}$ | Gd ₆₄ ¹⁶⁹ | $\frac{168.95203}{168.952287}$ | 64n | 2+0 | 8+0 | 12+3 | 0+16 | 0+15 | 0+7 | 1+0 | $\frac{6.100M}{\beta^- 1s}$ |
| $\frac{1364.55}{-}$ | Gd ₆₄ ¹⁷⁰ | $\frac{169.95438}{-}$ | 64n | 2+0 | 8+0 | 10+4 | 0+16 | 0+15 | 1+7 | 1+0 | $\frac{3.05M}{\beta^-}$ |
| $\frac{1368.81}{-}$ | Gd ₆₄ ¹⁷¹ | $\frac{170.95847}{-}$ | 64n | 2+0 | 8+0 | 8+5 | 0+16 | 1+14 | 1+8 | 1+0 | $\frac{3990M}{\beta^-}$ |
| $\frac{1374.70}{-}$ | Gd ₆₄ ¹⁷² | $\frac{171.96081}{-}$ | 64n | 2+0 | 8+0 | 8+5 | 0+16 | 1+14 | 0+9 | 1+0 | $\frac{1.900M}{\beta^-}$ |

$E_c(\text{MeV})$ = valore calcolato dell'energia di legame

$E_s(\text{MeV})$ = valore sperimentale dell'energia di legame

m_c = valore calcolato della massa atomica

m_s = valore sperimentale della massa atomica

n = numero di neutroni centrali attivi

1-7 = numero quantico associato al livello

$p + d$ = (numero di protoni) + (numero di deutoni) in orbita

$p - T_{1/2}$ = particella emessa – periodo di dimezzamento

$E_p(\text{eV})$ = energia della particella emessa