

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 196,342 (2024)	1-Sep-2023

$Q(\beta^-) = -9376$ 19; $S(n) = 10238$ 20; $S(p) = 2774$ 19; $Q(\alpha) = 6773.8$ 18 [2021Wa16](#)
 $S(2n) = 18417$ 18, $S(2p) = 3911$ 19, $Q(\epsilon p) = 2958$ 18 ([2021Wa16](#)).

 ^{202}Rn LevelsCross Reference (XREF) Flags

- A** ^{206}Ra α decay
B $^{166}\text{Er}(^{40}\text{Ar}, 4n\gamma)$
C $^{181}\text{Ta}(^{27}\text{Al}, 6n\gamma)$, $^{192}\text{Pt}(^{16}\text{O}, 6n\gamma)$
D Coulomb excitation

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
0 [‡]	0 ⁺	9.7 s 2	ABCD	$\% \alpha = 78$ 8; $\% \epsilon + \% \beta^+ = 22$ 8 $\% \alpha$: From parent-daughter ($E\alpha_1 - E\alpha_2$) correlations in 1987He10 . Others: $\geq 80\%$ (1992Wa29 , 1993Wa04), 93% (1971Ho01). T _{1/2} : Weighted average of 10.3 s 4 (1996Ta18), 9.5 s 2 (1992Wa29), 9.85 s 20 (1971Ho01) using $\alpha(t)$ decay. Others: 9.7 s 11 (2015We16) 10 s 1 (1987He10), 10.5 s 15 (1969Ha03), 13 s 2 (1967Va17). $E\alpha = 6618$ keV 27 (2015We16), 6641 keV 1 (1996Ta18), 6640.9 keV 25 (1993Wa04), 6636 keV 3 (1992Wa29 , 1967Va17), 6638 keV 10 (1987He10).
504.00 [‡] 10	2 ⁺	8.4 ps 25	BCD	$B(E2)\uparrow = 1.0$ 3 $Q = +0.9 +29 -18$ (2015Ga19) J^π : 504.0 γ E2 to 0 ⁺ . T _{1/2} : From $B(E2)\uparrow$ in Coulomb Excitation (2015Ga19).
1029.7 [#] 3	(2 ⁺)		B D	J^π : 525.7 γ most probably $\Delta J = 0$ to 2 ⁺ (2002Do19).
1073.10 [‡] 23	4 ⁺	2.1 ps 6	BCD	T _{1/2} : From $B(E2)(W.u.) = 63$ 18 in Coulomb Excitation (2015Ga19). J^π : 569.1 γ E2 to 2 ⁺ .
1502.2 [#] 6	(4 ⁺)		B D	J^π : 472.5 γ to (2 ⁺); band assignment.
1698.2 [‡] 3	6 ⁺		BCD	J^π : 625.2 γ (E2) to 4 ⁺ ; band assignment. 379.9 γ from the 8 ⁺ level suggests 6 ⁺ .
1790.0 4	6 ⁺		BC	J^π : 716.7 γ E2 to 4 ⁺ .
2077.9 4	8 ⁺		BC	J^π : 287.8 γ E2 to 6 ⁺ .
2159.5 [‡] 5	8 ⁺		B	J^π : 461.3 γ E2 to 6 ⁺ ; band assignment.
2211.1 4			B	
2260.4 5	(9 ⁻)		B	J^π : 182.5 γ (E1) to 8 ⁺ ; Similarity with ^{204}Rn suggests 9 ⁻ assignment.
2260.4+x 5		2.22 μs 7	B	Additional information 1 . T _{1/2} : From implant- $\gamma(t)$ in 2002Do19 .
2275.0 5	8 ⁺		B	J^π : 576.8 γ E2 to 6 ⁺ .
2442.9 5	8 ⁺		B	J^π : 744.7 γ E2 to 6 ⁺ .
2760.5 [‡] 6	10 ⁺		B	J^π : 601.0 γ E2 to 8 ⁺ ; band assignment.
2775.5 8			B	

[†] From a least-squares fit to $E\gamma$.

[‡] Band(A): $K^\pi = 0^+$, ground-state band.

[#] Band(B): Band based on the (2⁺), 1029.7-keV state.

Adopted Levels, Gammas (continued)

$\gamma(^{202}\text{Rn})$								Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^\ddagger$	
504.00	2 ⁺	504.0 1	100	0	0 ⁺	E2	0.0345 5	$\alpha(\text{K})=0.02325$ 33; $\alpha(\text{L})=0.00843$ 12; $\alpha(\text{M})=0.002141$ 30 $\alpha(\text{N})=0.000557$ 8; $\alpha(\text{O})=0.0001170$ 16; $\alpha(\text{P})=1.505\times 10^{-5}$ 21 B(E2)(W.u.)=28 9
1029.7	(2 ⁺)	525.7 3	100 21	504.00 2 ⁺		[E2+M1]	0.08 5	$\alpha(\text{K})=0.06$ 4; $\alpha(\text{L})=0.013$ 6; $\alpha(\text{M})=0.0032$ 13 $\alpha(\text{N})=8.2\times 10^{-4}$ 34; $\alpha(\text{O})=1.8\times 10^{-4}$ 8; $\alpha(\text{P})=2.5\times 10^{-5}$ 12
1073.10	4 ⁺	1030 569.1 2	<10.4 100	0 0 ⁺ 504.00 2 ⁺		E2	0.0261 4	E_γ, I_γ : From Coulomb Excitation. $\alpha(\text{K})=0.01829$ 26; $\alpha(\text{L})=0.00583$ 8; $\alpha(\text{M})=0.001468$ 21 $\alpha(\text{N})=0.000382$ 5; $\alpha(\text{O})=8.06\times 10^{-5}$ 11; $\alpha(\text{P})=1.054\times 10^{-5}$ 15 B(E2)(W.u.)=63 18
1502.2 1698.2	(4 ⁺) 6 ⁺	472.5 5 625.2 2	100 100	1029.7 (2 ⁺) 1073.10 4 ⁺		E2	0.02115 30	$\alpha(\text{K})=0.01524$ 21; $\alpha(\text{L})=0.00445$ 6; $\alpha(\text{M})=0.001111$ 16 $\alpha(\text{N})=0.000289$ 4; $\alpha(\text{O})=6.13\times 10^{-5}$ 9; $\alpha(\text{P})=8.11\times 10^{-6}$ 11
1790.0	6 ⁺	716.7 3	100	1073.10 4 ⁺		E2	0.01581 22	$\alpha(\text{K})=0.01175$ 16; $\alpha(\text{L})=0.00306$ 4; $\alpha(\text{M})=0.000758$ 11 $\alpha(\text{N})=0.0001972$ 28; $\alpha(\text{O})=4.20\times 10^{-5}$ 6; $\alpha(\text{P})=5.65\times 10^{-6}$ 8
2077.9	8 ⁺	287.8 2	100 4	1790.0 6 ⁺		E2	0.1565 22	$\alpha(\text{K})=0.0754$ 11; $\alpha(\text{L})=0.0602$ 9; $\alpha(\text{M})=0.01585$ 23 $\alpha(\text{N})=0.00413$ 6; $\alpha(\text{O})=0.000849$ 12; $\alpha(\text{P})=0.0001013$ 14
		379.9 3	10.1 19	1698.2 6 ⁺		(E2)	0.0705 10	$\alpha(\text{K})=0.0416$ 6; $\alpha(\text{L})=0.02154$ 31; $\alpha(\text{M})=0.00558$ 8 $\alpha(\text{N})=0.001453$ 21; $\alpha(\text{O})=0.000302$ 4; $\alpha(\text{P})=3.73\times 10^{-5}$ 5
2159.5	8 ⁺	461.3 3	100	1698.2 6 ⁺		E2	0.0427 6	$\alpha(\text{K})=0.0278$ 4; $\alpha(\text{L})=0.01117$ 16; $\alpha(\text{M})=0.00286$ 4 $\alpha(\text{N})=0.000744$ 11; $\alpha(\text{O})=0.0001555$ 22; $\alpha(\text{P})=1.975\times 10^{-5}$ 28
2211.1 2260.4	(9 ⁻)	421.1 2 182.5 3	100 100	1790.0 6 ⁺ 2077.9 8 ⁺		(E1)	0.1074 16	$\alpha(\text{K})=0.0859$ 12; $\alpha(\text{L})=0.01635$ 24; $\alpha(\text{M})=0.00389$ 6 $\alpha(\text{N})=0.001003$ 15; $\alpha(\text{O})=0.0002125$ 31; $\alpha(\text{P})=2.84\times 10^{-5}$ 4
2275.0	8 ⁺	576.8 3	100	1698.2 6 ⁺		E2	0.0253 4	$\alpha(\text{K})=0.01781$ 25; $\alpha(\text{L})=0.00561$ 8; $\alpha(\text{M})=0.001409$ 20 $\alpha(\text{N})=0.000367$ 5; $\alpha(\text{O})=7.75\times 10^{-5}$ 11; $\alpha(\text{P})=1.014\times 10^{-5}$ 14
2442.9	8 ⁺	744.7 4	100	1698.2 6 ⁺		E2	0.01461 21	$\alpha(\text{K})=0.01093$ 15; $\alpha(\text{L})=0.00277$ 4; $\alpha(\text{M})=0.000683$ 10 $\alpha(\text{N})=0.0001778$ 25; $\alpha(\text{O})=3.79\times 10^{-5}$ 5; $\alpha(\text{P})=5.12\times 10^{-6}$ 7
2760.5	10 ⁺	601.0 4	100	2159.5 8 ⁺		E2	0.02307 32	$\alpha(\text{K})=0.01644$ 23; $\alpha(\text{L})=0.00498$ 7; $\alpha(\text{M})=0.001247$ 18 $\alpha(\text{N})=0.000325$ 5; $\alpha(\text{O})=6.86\times 10^{-5}$ 10; $\alpha(\text{P})=9.04\times 10^{-6}$ 13
2775.5		332.6 6	100	2442.9 8 ⁺				

Continued on next page (footnotes at end of table)

Adopted [Levels](#), [Gammas](#) (continued)

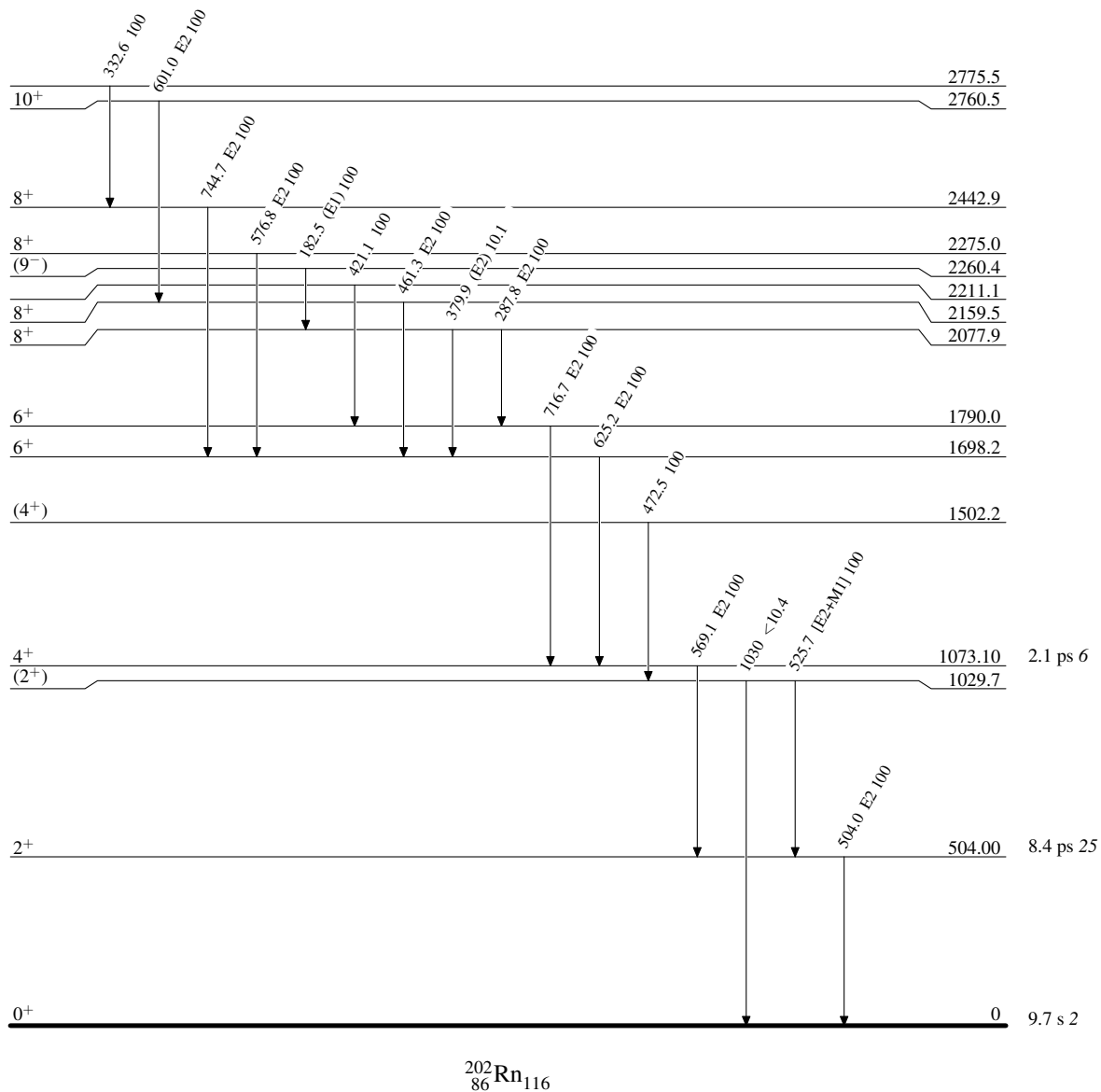
$\gamma(^{202}\text{Rn})$ (continued)

[†] From $^{166}\text{Er}(^{40}\text{Ar},4n\gamma)$, unless otherwise stated.

[‡] [Additional information 2](#).

Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level



Adopted Levels, Gammas

