

Coulomb excitation 1993Bu06,2002Kr09

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, A. A. Sonzogni		NDS 114, 435 (2013)	1-Apr-2013

2004Zi02: ^{58}Ni (205 MeV), ^{92}Mo (330 MeV), ^{14}N (35 MeV) beams. Measured $T_{1/2}$.
 2002Kr09: $^{150}\text{Nd}(^{32}\text{S}, ^{32}\text{S}')$, E=132 MeV, Ge array, charged particle detected with photocells, plunger to measure $T_{1/2}$.
 1993Bu06: level scheme from $^{150}\text{Nd}(^{92}\text{Mo}, ^{92}\text{Mo}'\gamma)$ E=330 MeV.
 1988Ah01: scattering of 10.5-MeV, 11-MeV α particles at 150° .
 1980FaZW: determined probabilities of E2, E3 and E4 transitions using multiple Coulomb excitation. Electric quadrupole matrix elements were reported.
 1978Ya02: $^{150}\text{Nd}(^{40}\text{Ar}, ^{40}\text{Ar}'\gamma)$ E=149 MeV used to excite members of the g.s. band to $J^\pi=8^+$. Lifetimes of levels were measured by the recoil-distance method; B(E2) values were deduced.
 1965Yo04: observed low lying states in reaction ($^{16}\text{O}, ^{16}\text{O}'\gamma$) E=43.5 MeV. γ rays were observed in coincidence with backscattered ^{16}O ions.

^{150}Nd Levels

B(E2): Data of 1973FrZN, 1977Wo03, 1980FaZW and 1988Ah01 were renormalized by evaluators to B(E2)(130)=2.751 22 and weighted averages were taken.

E(level) [‡]	J ^π #	T _{1/2}	Comments
0 [†]	0 ⁺		
130.1 [†] 4	2 ⁺	1.48 ns 3	B(E2)↑=2.76 4 (2001Ra27) T _{1/2} : from B(E2) evaluation of 2001Ra27.
381.7 [†] 4	4 ⁺	60.5 ps 5	$\mu=+1.28$ 20 (1989Ra17) B(E2)↑: (2 ⁺ to 4 ⁺)=1.52 11 (1973FrZN reported in 1976Ba18). T _{1/2} : adopted value. Weighted average of 60.4 ps 5 (2002Kr09), 63 ps 3 (1978Ya02) and 61 ps 4 from B(E2).
676.7 [@] 6	0 ⁺	5.7 ps 3	T _{1/2} : weighted average of 6.2 ps 3 (2002Kr09) and 5.5 ps 2 from B(E2)(2 ⁺ to 0 ⁺). Other: 11.36 ps +7-14 (2004Zi02). E(level): level observed by 1965Yo04. B(E2) (from 130-keV (2 ⁺) level)=0.0428 19.
721.3 [†] 6	6 ⁺	12.5 ps 5	T _{1/2} : weighted average of 12.3 ps 7 (2002Kr09) and 12.6 ps 7 from B(E2)(4 ⁺ to 6 ⁺). B(E2)(4 ⁺ to 6 ⁺)=1.44 10.
851.5 [@] 4	2 ⁺	4.50 ps 14	B(E2)↑=0.0120 18 T _{1/2} : from 2002Kr09. Other: 5.5 ps +10-5 (2004Zi02).
852.7 ^{&} 7	1 ⁻	0.36 ps +5-9	T _{1/2} : from 2004Zi02.
935.0 ^{&} 7	3 ⁻		B(E3)↑=0.18 3 J ^π : $\alpha\gamma$ coincidences in ($\alpha, \alpha'\gamma$) studies (1963Ha20). B(E3)↑: From 1988Ah01.
1062.0 ^a 4	2 ⁺	1.46 ps 21	B(E2)↑=0.069 3 T _{1/2} : from 2002Kr09. Other: 1.09 ps +4-12 (2004Zi02). B(E2)↑: (2 to 2)=0.032 5.
1129.3 ^{&} 11	5 ⁻		
1129.7 [†] 8	8 ⁺	4.7 ps 5	B(E2)↑: (6 to 8)=1.36 9. T _{1/2} : weighted average of 3.7 ps 4 (2002Kr09) and 4.92 ps 21 (2004Zi02).
1138.6 [@] 5	4 ⁺	3.3 ps 3	T _{1/2} : from 2002Kr09. Other: 4.2 ps +23-5 (2004Zi02).
1353.8 ^a 7	4 ⁺	2.0 ps 6	T _{1/2} : from 2002Kr09. Other: 3.7 ps +10-12 (2004Zi02).
1433.5 ^{&} 12	(7 ⁻)		E(level): observed only by 1993Bu06.
1541.5 [@] 11	(6 ⁺)		E(level): observed only by 1993Bu06.
1599.8 [†] 13	10 ⁺	2.59 ps 13	E(level): from 1993Bu06.

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Coulomb excitation 1993Bu06,2002Kr09 (continued) ^{150}Nd Levels (continued)

E(level) [‡]	J ^π #	T _{1/2}	Comments
2120.1 [†] 16	(12 ⁺)	1.8 ps +2-3	T _{1/2} : weighted average of 2.56 ps 14 (2002Kr09), 2.7 ps 3 (2004Zi02). E(level): from 1993Bu06.
2683.6 [†] 19	(14 ⁺)		T _{1/2} : from 2004Zi02. E(level): from 1993Bu06.

[†] Band(A): g.s. rotational band. See Adopted Levels.

[‡] From least-squares fit to E_γ assuming ΔE_γ=1 keV when unknown.

For g.s. rotational band, based on Coul. ex. and fit of inertial parameter to local trend. Others: from Adopted Levels.

@ Band(B): K=0 β band. See Adopted Levels.

& Band(C): K=0 octupole band. See Adopted Levels.

^a Band(D): γ-vibrational band. See Adopted Levels.

γ(^{150}Nd)

E _γ [†]	I _γ [#]	E _i (level)	J _i ^π	E _f	J _f ^π	Mult.	Comments
130.1 5		130.1	2 ⁺	0	0 ⁺	E2	B(E2)(W.u.)=217 4
203.2 [‡]		1138.6	4 ⁺	935.0	3 ⁻		E _γ : observed only by 1993Bu06.
251.4 5		381.7	4 ⁺	130.1	2 ⁺	E2	B(E2)(W.u.)=196.8 17
287.3 [‡]	1.3 4	1138.6	4 ⁺	852.7	1 ⁻		
339.7 5		721.3	6 ⁺	381.7	4 ⁺		
409.5 [@] 5		1129.7	8 ⁺	721.3	6 ⁺		
417.4 ^{‡@}	3.4 6	1138.6	4 ⁺	721.3	6 ⁺		
469 [‡]		1599.8	10 ⁺	1129.7	8 ⁺		E _γ : from 1993Bu06.
469.18 [@] 19	22 4	851.5	2 ⁺	381.7	4 ⁺	E2	B(E2)(W.u.)=17 4
520.2 ^{‡@}		2120.1	(12 ⁺)	1599.8	10 ⁺		
546.6 5		676.7	0 ⁺	130.1	2 ⁺		
553.2 [‡]		935.0	3 ⁻	381.7	4 ⁺		E _γ : adopted from 1993Bu06.
563.5 [‡]		2683.6	(14 ⁺)	2120.1	(12 ⁺)		E _γ : from 1993Bu06.
633.0 [‡]		1353.8	4 ⁺	721.3	6 ⁺		E _γ : observed only by 1993Bu06.
680.30 ^{‡@} 21	1.0×10 ² 3	1062.0	2 ⁺	381.7	4 ⁺		
712.44 ^{‡@}		1433.5	(7 ⁻)	721.3	6 ⁺		
720.50 [@] 19	100 22	851.5	2 ⁺	130.1	2 ⁺	E2	B(E2)(W.u.)=8.9 24
722.6 [‡]		852.7	1 ⁻	130.1	2 ⁺		E _γ : adopted from 1993Bu06.
747.6 [‡]		1129.3	5 ⁻	381.7	4 ⁺		E _γ : adopted from 1993Bu06.
756.3 ^{@&}	100 14	1138.6	4 ⁺	381.7	4 ⁺		
804.5 [‡]		935.0	3 ⁻	130.1	2 ⁺		E _γ : adopted from 1993Bu06.
850.9 [@] 4	31 5	851.5	2 ⁺	0	0 ⁺	E2	B(E2)(W.u.)=1.2 3
852.7 [‡]		852.7	1 ⁻	0	0 ⁺		E _γ : adopted from 1993Bu06.
931.91 [@] 15	42 13	1062.0	2 ⁺	130.1	2 ⁺		
972.0 ^{‡@}	1.0×10 ² 3	1353.8	4 ⁺	381.7	4 ⁺		
1007.6 ^{&}	0.46 8	1138.6	4 ⁺	130.1	2 ⁺		
1062.96 [@] 15	100 4	1062.0	2 ⁺	0	0 ⁺		
1159.8 [‡]		1541.5	(6 ⁺)	381.7	4 ⁺		E _γ : from 1993Bu06.
1223.2 [@]	73 24	1353.8	4 ⁺	130.1	2 ⁺		

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Coulomb excitation 1993Bu06,2002Kr09 (continued)

$\gamma(^{150}\text{Nd})$ (continued)

† From 1973FrZN, except where noted.

‡ From 1993Bu06.

Relative photon branching from each level, deduced from reduced transition gamma probabilities quoted by 2002Kr09.

@ From adopted gammas.

& Placement of transition in the level scheme is uncertain.

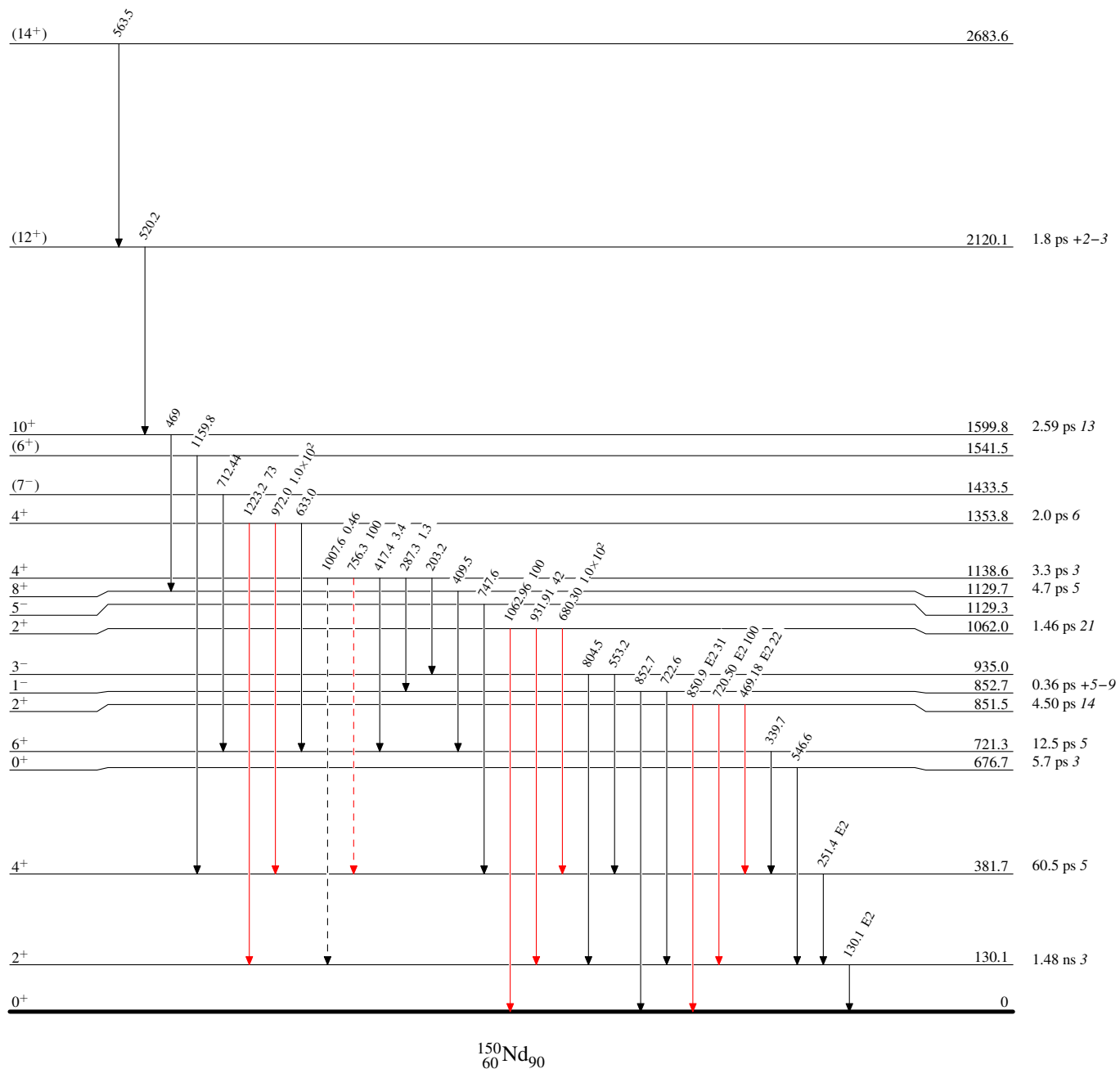
Coulomb excitation 1993Bu06,2002Kr09

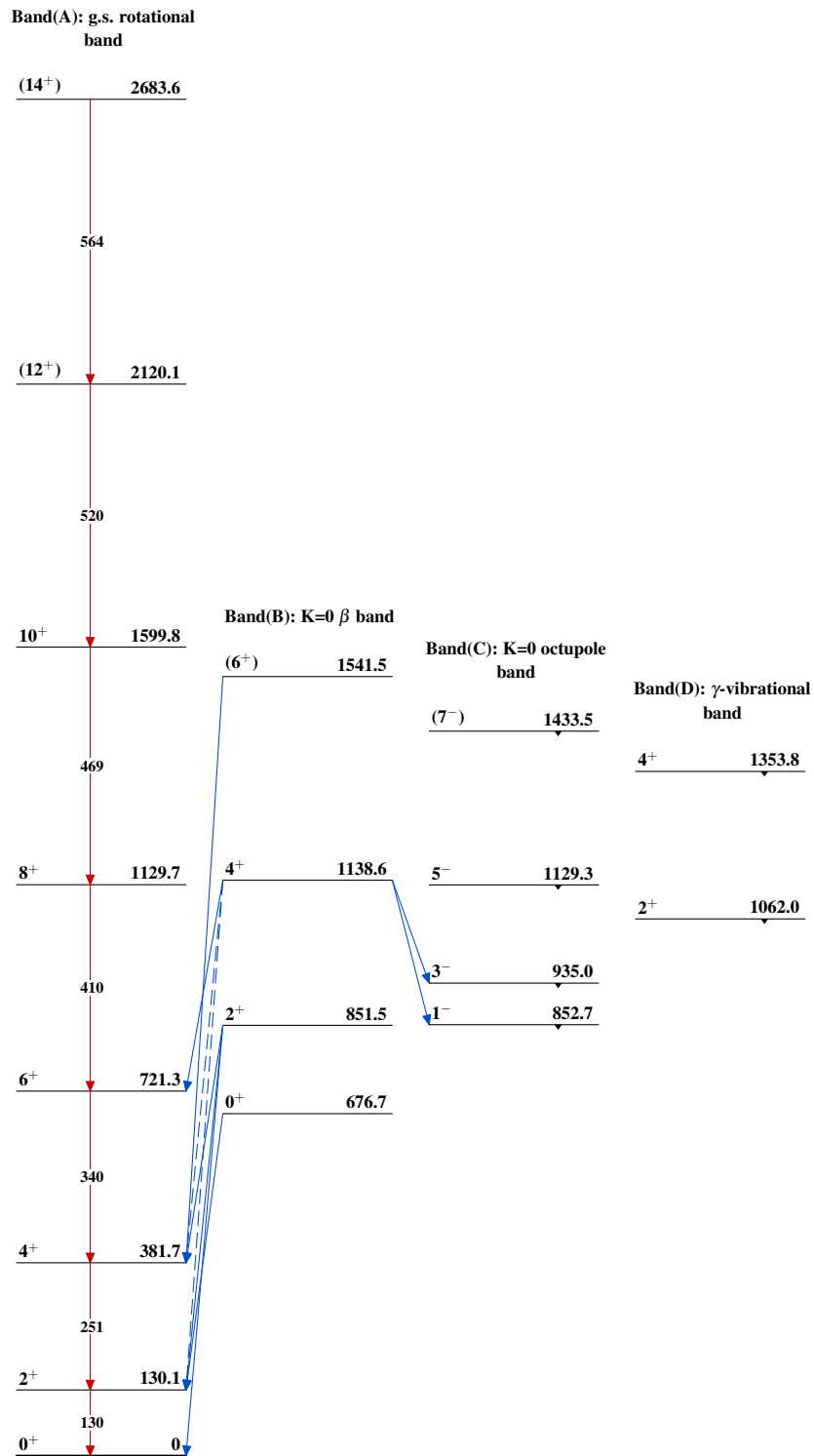
Legend

Level Scheme

Intensities: Type not specified

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



Coulomb excitation 1993Bu06,2002Kr09 $^{150}_{60}\text{Nd}_{90}$