

$^{76}\text{Ge}(^{34}\text{S},\alpha 4n\gamma)$ 1996Je02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne	NDS 110, 1745 (2009)	31-Dec-2008

1996Je02: $^{76}\text{Ge}(^{34}\text{S},\alpha 4n\gamma)$ E=148 MeV. Measured: E_γ , I_γ , $\gamma\gamma$, γ yields $\gamma\gamma(\theta)$. Deduced: ^{102}Pd levels, J^π , band structure.

 ^{102}Pd Levels

E(level) [‡]	J^π [†]	Comments
0 [#]	0 ⁺	
556.41 [#] 5	2 ⁺	
1275.78 [#] 10	4 ⁺	
2111.27 [#] 11	6 ⁺	
2111.60 15	3 ⁺	
2137.76 12	4 ⁺	
2294.43 11	(4 ⁻)	
2300.90 10	(4 ⁺)	
2474.17 10	5 ⁻	
2913.88 [@] 12	6 ⁻	
3012.99 [#] 11	8 ⁺	
3187.97 ^a 12	7 ⁻	
3340.18 12	8 ⁺	
3670.40 [@] 12	8 ⁻	
3727.64 ^{&} 12	9 ⁻	
3889.17 ^a 16	(9 ⁻)	
3992.64 [#] 12	10 ⁺	
4033.0 8		
4317.59 [@] 12	10 ⁻	
4328.62 13	(10 ⁺)	
4432.60 ^{&} 12	11 ⁻	
4645.9 ^a 3	(11 ⁻)	
4747.1 3		E(level): recalculated by the evaluator. There was an obvious typing error (4742) in the level energy given by 1996Je02.
4944.63 19	(11 ⁻)	
5055.03 [#] 13	12 ⁺	
5093.90 [@] 13	12 ⁻	
5260.52 17	(12 ⁺)	
5325.75 ^{&} 14	13 ⁻	
5577.0 ^a 4	(13 ⁻)	
5768.7 3		
5984.59 [@] 14	14 ⁻	
6138.56 20	14 ⁺	
6179.7 [#] 5	14 ⁺	
6344.83 ^{&} 16	15 ⁻	
6538.9 ^a 5	(15 ⁻)	
6987.92 [@] 16	16 ⁻	
7428.7 [#] 6	16 ⁺	
7461.13 ^{&} 19	17 ⁻	
7585.5 ^a 6	(17 ⁻)	
8063.1 [@] 4	18 ⁻	
8707.0 [#] 7	18 ⁺	

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$^{76}\text{Ge}(^{34}\text{S},\alpha 4n\gamma)$ **1996Je02** (continued) ^{102}Pd Levels (continued)

E(level) [‡]	J ^π [†]	Comments
8737.3 ^{&} 10	19 ⁻	
8778.5 ^a 11	(19 ⁻)	
9214.0 [@] 7	20 ⁻	
9892.8 12	20 ⁺	E(level): obvious typing error, E=9829 (1996Je02), corrected by the evaluator.
10178.0 ^{&} 13	21 ⁻	
10223.0 [#] 8	20 ⁺	
10540.0 [@] 11	22 ⁻	
11227.6 13	(22 ⁺)	
11886.1 [#] 9	22 ⁺	
12025.0 [@] 15	24 ⁻	
13592.8 [#] 10	24 ⁺	
15414.2 [#] 12	(26 ⁺)	

[†] From Adopted Levels.

[‡] Deduced by evaluator from a least-squares fit to γ -ray energies.

Band(A): probable member of the g.s. $\Delta J=2$ rotational band.

@ Band(B): probable member of $\Delta J=2$ rotational band on J^π=6⁻ level.

& Band(C): probable member of $\Delta J=2$ rotational band on J^π=9⁻ level.

^a Band(D): probable member of $\Delta J=2$ rotational band on J^π=7⁻ level.

 $\gamma(^{102}\text{Pd})$

DCO(A): $\Delta J=-2$ and $\delta=0$.

DCO(B): $\Delta J=-1$ and $\delta=0$.

E _γ	I _γ	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. [‡]	Comments
110.0 2		5055.03	12 ⁺	4944.63 (11 ⁻)			
173.3 1	44 10	2474.17	5 ⁻	2300.90 (4 ⁺)		D+Q	
179.7 1	58 9	2474.17	5 ⁻	2294.43 (4 ⁻)		D+Q	DCO=0.94
182.6 2	8 6	2294.43	(4 ⁻)	2111.60 3 ⁺			E_{γ} : could be an unresolved multiplet. A.
274.1 2	46 9	3187.97	7 ⁻	2913.88 6 ⁻		D+Q	DCO=0.87 25 DCO=1.06 10
327.20 10	98 11	3340.18	8 ⁺	3012.99 8 ⁺		D+Q	DCO=1.16 11
336.0 1	89 14	4328.62	(10 ⁺)	3992.64 10 ⁺			A.
336.4 1	102 20	2474.17	5 ⁻	2137.76 4 ⁺		D+Q	
387.50 10	65 11	3727.64	9 ⁻	3340.18 8 ⁺		D+Q	DCO=0.61
439.7 1	143 18	2913.88	6 ⁻	2474.17 5 ⁻		D+Q	DCO=0.94 A.
440.0 1	33 6	4432.60	11 ⁻	3992.64 10 ⁺			DCO=0.46 A.
482.4 1	66 6	3670.40	8 ⁻	3187.97 7 ⁻		D+Q	DCO=0.92 12 A.
508.2 2	111 12	5768.7		5260.52 (12 ⁺)			A.
513.5 3	64 9	5260.52	(12 ⁺)	4747.1			
539.7 1	116 11	3727.64	9 ⁻	3187.97 7 ⁻		E2	
556.4 1	1.2×10 ³ 1	556.41	2 ⁺	0 0 ⁺		E2	
590.0 1	41 7	4317.59	10 ⁻	3727.64 9 ⁻		D+Q	DCO=0.65
602.1 4	21 5	8063.1	18 ⁻	7461.13 17 ⁻			9 A.
643.1 1	66 11	6987.92	16 ⁻	6344.83 15 ⁻			DCO=1.04
647.2 1	253 20	4317.59	10 ⁻	3670.40 8 ⁻		E2	DCO=1.04 43 A.

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$^{76}\text{Ge}(^{34}\text{S},\alpha 4n\gamma)$ **1996Je02 (continued)** $\gamma(^{102}\text{Pd})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
658.8 1	46 10	5984.59	14 ⁻	5325.75	13 ⁻	D	DCO=0.66
661.3 1	75 8	5093.90	12 ⁻	4432.60	11 ⁻	D	DCO=0.53
701.2 † 1	102 18	3889.17	(9 ⁻)	3187.97	7 ⁻	E2	DCO=0.89 DCO=0.87
705.0 1	553 40	4432.60	11 ⁻	3727.64	9 ⁻	E2	225
713.8 1	128 19	3187.97	7 ⁻	2474.17	5 ⁻	E2	
714.6 1	278 25	3727.64	9 ⁻	3012.99	8 ⁺	D+Q	DCO=0.56
719.3 1	1050 29	1275.78	4 ⁺	556.41	2 ⁺	E2	DCO=0.96
756.5 1	176 20	3670.40	8 ⁻	2913.88	6 ⁻	E2	DCO=1.11
756.7 † 1	99 15	4645.9	(11 ⁻)	3889.17	(9 ⁻)	E2	DCO=0.80 14
776.3 1	233 20	5093.90	12 ⁻	4317.59	10 ⁻	E2	DCO=0.98 DCO=0.65
835.5 1	1000 24	2111.27	6 ⁺	1275.78	4 ⁺	E2	DCO=1.06
890.7 1	243 23	5984.59	14 ⁻	5093.90	12 ⁻	E2	3
893.1 1	525 45	5325.75	13 ⁻	4432.60	11 ⁻	E2	DCO=0.88 DCO=0.54 10
901.7 1	950 20	3012.99	8 ⁺	2111.27	6 ⁺	E2	DCO=1.01
931.1 3	96 18	5577.0?	(13 ⁻)	4645.9	(11 ⁻)	E2	DCO=1.00 10
931.9 1	79 9	5260.52	(12 ⁺)	4328.62	(10 ⁺)	E2	A.
951.6 2	113 28	4944.63	(11 ⁻)	3992.64	10 ⁺		
961.9 3	115 18	6538.9?	(15 ⁻)	5577.0?	(13 ⁻)	(E2)	DCO=0.71 13
979.7 1	547 21	3992.64	10 ⁺	3012.99	8 ⁺	E2	DCO=0.92 DCO=0.62 18
988.4 1	100 11	4328.62	(10 ⁺)	3340.18	8 ⁺	(E2)	A.
1003.3 1	252 19	6987.92	16 ⁻	5984.59	14 ⁻	E2	DCO=0.86 DCO=0.63 10
1018.6 1	40 11	2294.43	(4 ⁻)	1275.78	4 ⁺		B.
1019.1 1	376 33	6344.83	15 ⁻	5325.75	13 ⁻	E2	DCO=0.95
1019.5 4	88 25	4747.1		3727.64	9 ⁻		5
1020 [#]		4033.0		3012.99	8 ⁺		E_γ : calculated by evaluator from level scheme of 1996Je02.
1022.0 8	226 72	5055.03	12 ⁺	4033.0			
1046.6 3	91 17	7585.5?	(17 ⁻)	6538.9?	(15 ⁻)	E2	DCO=0.85
1062.4 1	376 13	5055.03	12 ⁺	3992.64	10 ⁺	E2	DCO=0.90
1074.9 5	165 18	8063.1	18 ⁻	6987.92	16 ⁻	E2	DCO=0.97
1084.3 2	140 13	6138.56	14 ⁺	5055.03	12 ⁺	E2	DCO=1.03
1116.3 1	261 32	7461.13	17 ⁻	6344.83	15 ⁻	E2	DCO=1.08
1124.7 4	301 13	6179.7	14 ⁺	5055.03	12 ⁺	E2	DCO=0.95
1150.9 5	149 17	9214.0	20 ⁻	8063.1	18 ⁻		DCO=0.99
1185.8 9	118 22	9892.8	20 ⁺	8707.0	18 ⁺	E2	DCO=0.92 15
1193.0 9	52 15	8778.5?	(19 ⁻)	7585.5?	(17 ⁻)	E2	DCO=1.02 40
1249.0 4	285 17	7428.7	16 ⁺	6179.7	14 ⁺	E2	DCO=0.95
1276.2 9	134 27	8737.3	19 ⁻	7461.13	17 ⁻		5
1278.2 3	250 21	8707.0	18 ⁺	7428.7	16 ⁺	E2	DCO=1.10 12
1326.0 9	115 20	10540.0	22 ⁻	9214.0	20 ⁻		DCO=1.00
1334.8 6	67 19	11227.6	(22 ⁺)	9892.8	20 ⁺		7
1440.6 9	70 19	10178.0	21 ⁻	8737.3	19 ⁻		
1485.0 9	75 31	12025.0	24 ⁻	10540.0	22 ⁻	E2	DCO=0.84 23
1516.0 4	188 40	10223.0	20 ⁺	8707.0	18 ⁺	E2	A.
1555.6 4	30 6	2111.60	3 ⁺	556.41	2 ⁺	D+Q	
1581.29 20	87 29	2137.76	4 ⁺	556.41	2 ⁺	E2	
1663.1 4	89 23	11886.1	22 ⁺	10223.0	20 ⁺	E2	DCO=0.75 16
1706.7 5	62 18	13592.8	24 ⁺	11886.1	22 ⁺		A.
1744.5 1	21 7	2300.90	(4 ⁺)	556.41	2 ⁺		
1821.4 5	35 10	15414.2?	(26 ⁺)	13592.8	24 ⁺		

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$^{76}\text{Ge}(^{34}\text{S},\alpha 4n\gamma)$ **1996Je02** (continued)

$\gamma(^{102}\text{Pd})$ (continued)

- † The sequence of these γ -rays may be reversed.
‡ From DCO, stretched Q assumed E2, no δ given for mixed transitions.
Placement of transition in the level scheme is uncertain.

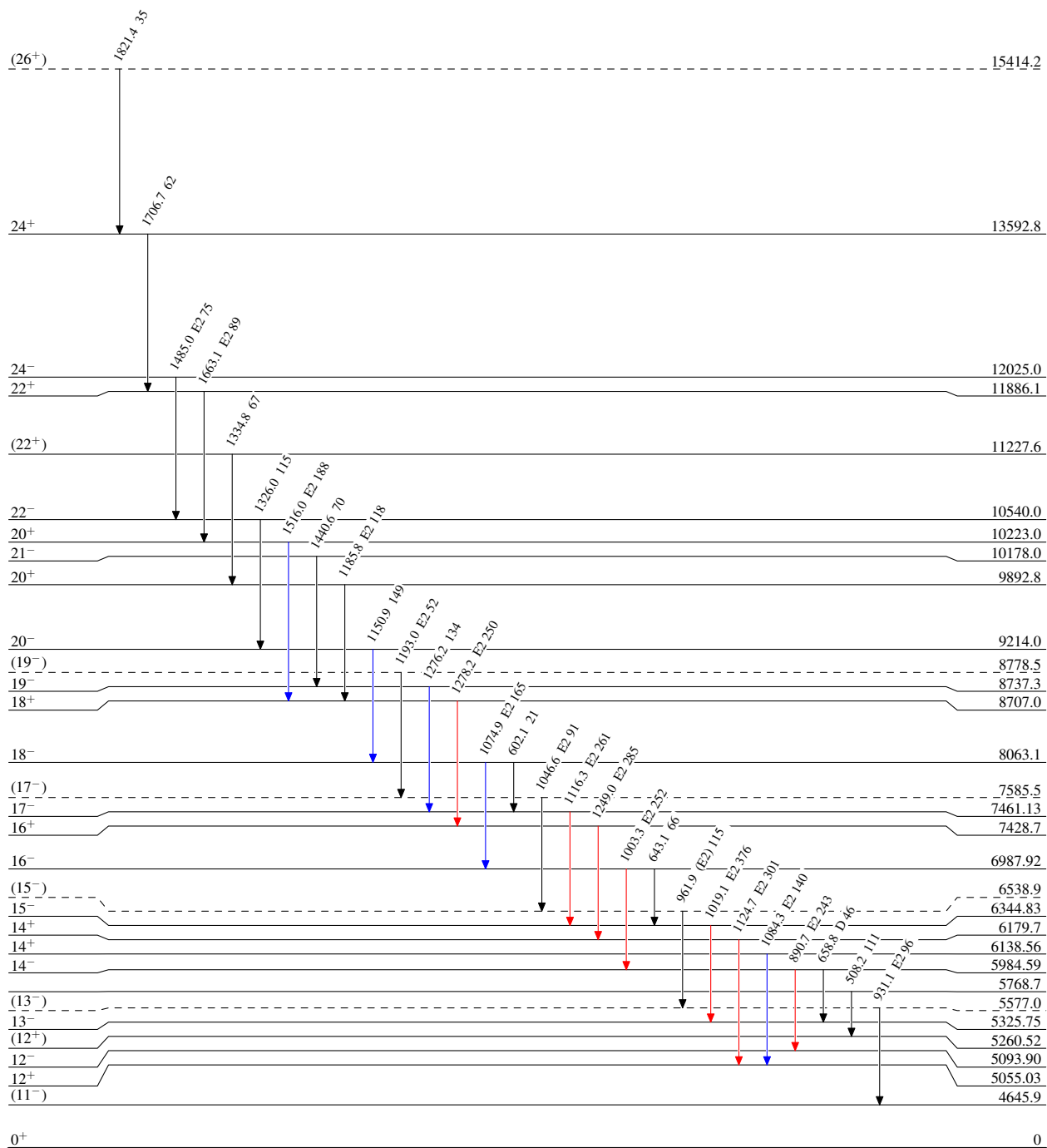
$^{76}\text{Ge}(^{34}\text{S},\alpha 4n\gamma)$ 1996Je02

Level Scheme

Intensities: Type not specified

Legend

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







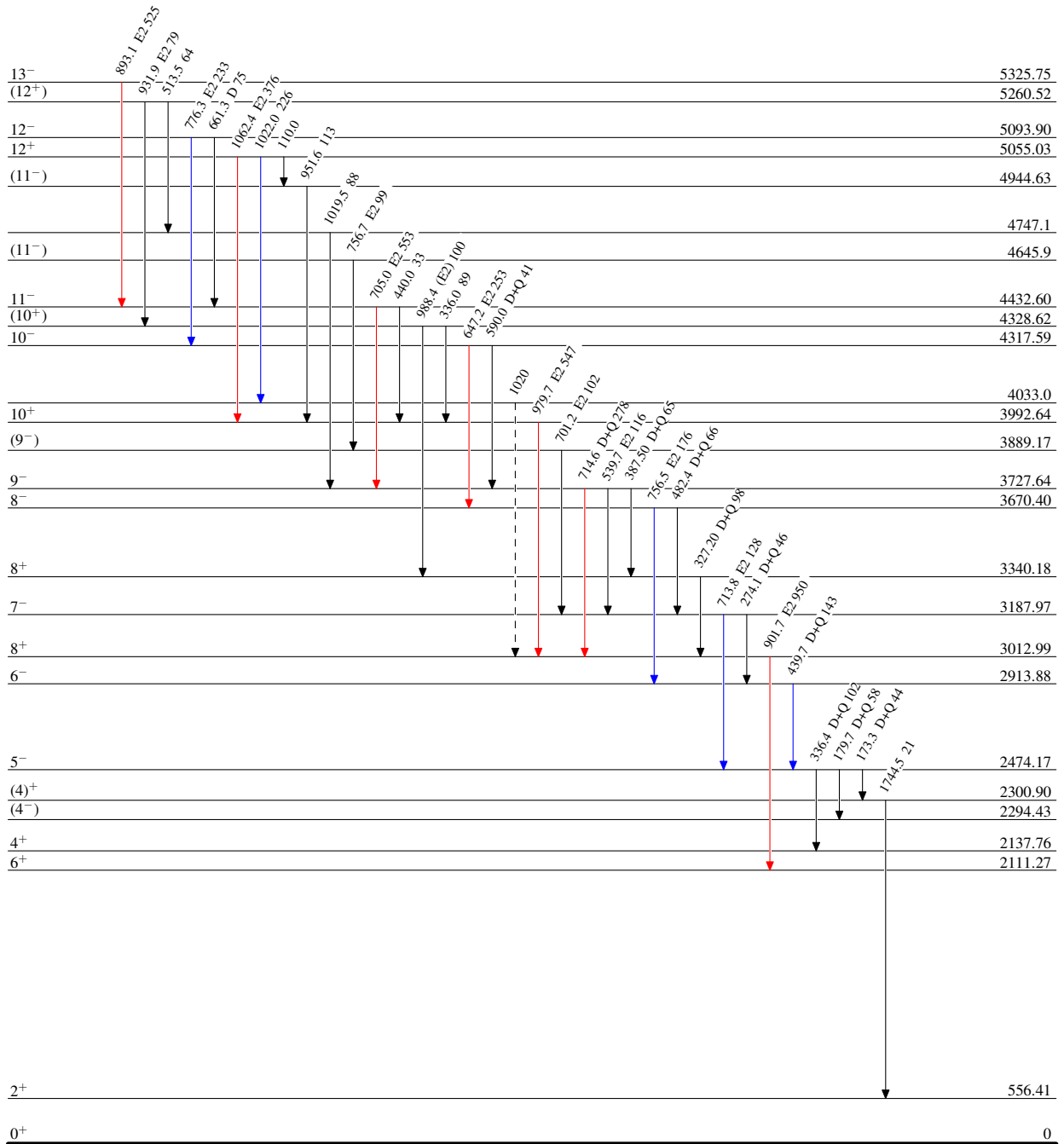
$^{76}\text{Ge}(^{34}\text{S},\alpha 4n\gamma)$ 1996Je02

Level Scheme (continued)

Intensities: Type not specified

Legend

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



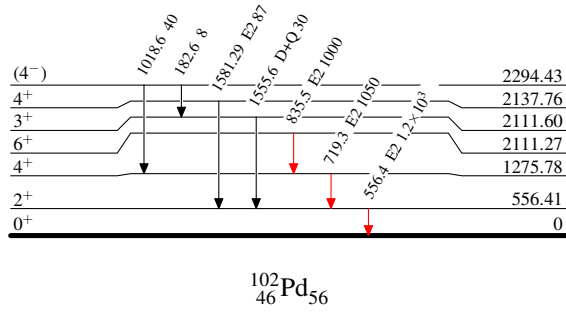
$^{76}\text{Ge}(^{34}\text{S}, \alpha 4n\gamma)$ 1996Je02

Level Scheme (continued)

Intensities: Type not specified

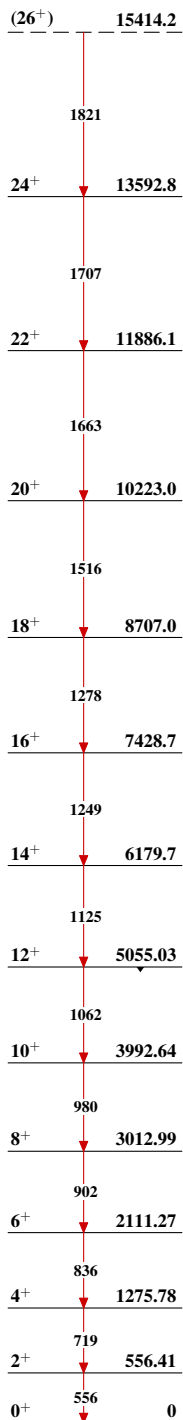
Legend

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

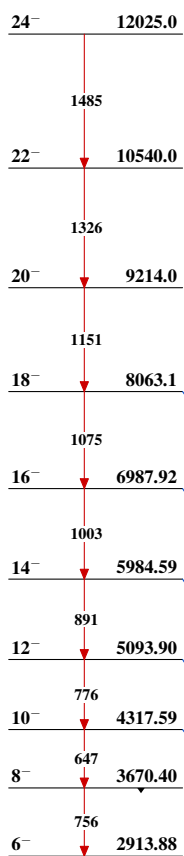


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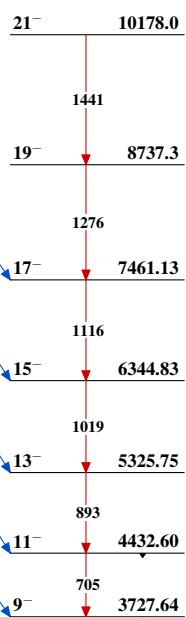
Band(A): Probable member
of the g.s. $\Delta J=2$
rotational band



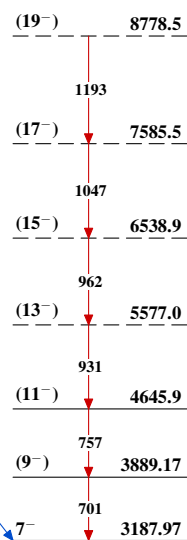
Band(B): Probable member
of $\Delta J=2$ rotational band
on $J^\pi=6^-$ level



Band(C): Probable member
of $\Delta J=2$ rotational band
on $J^\pi=9^-$ level



Band(D): Probable member
of $\Delta J=2$ rotational band
on $J^\pi=7^-$ level

 $^{102}_{46}\text{Pd}_{56}$