

⁷⁶Ge($\alpha, n\gamma$) **1989PrZX, 1979Ze02, 1991KuZY**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 135, 193 (2016)	31-May-2016

Includes ⁸⁰Se($\alpha, \alpha n\gamma$) E=27 MeV ([1987FuZO](#)).

[1989PrZX](#): E=9-16 MeV. Measured γ , $\gamma\gamma$, $\gamma(\theta)$, excitation functions. Main data are reported at 14 MeV.

[1979Ze02](#) (also [1981ZeZZ](#)): E=10-15 MeV. Measured γ , $\gamma\gamma$, $\gamma(\theta)$, excitation functions. Main data are at 12 MeV.

[1991KuZY](#) (also [1988KuZQ, 1988KuZP](#)): E=12.4, 13 MeV. Measured T_{1/2}(level) by DSAM and RDDS methods.

[1991KuZZ](#): E=16 MeV. Measured $\gamma(\theta)$.

[1987FuZO](#): E=13-16 MeV. Measured γ , $\gamma\gamma$, $\gamma(\theta)$. Detailed results of this study are not available, only the level scheme is given by the authors. Results from ⁸⁰Se($\alpha, \alpha n\gamma$) E=27 MeV are also listed. Only selected levels shown in the decay scheme.

⁷⁹Se Levels

The following levels are not included here for lack of confirmation: 2062 and 2570 (from [1979Ze02](#)); 2760, 3280 and 3515 (from [1987FuZO](#)).

E(level) [†]	J ^π [‡]	T _{1/2} [#]	Comments
0.0	7/2 ⁺		
95.98 17	1/2 ⁻	3.92 min 1	%IT=99.944 11; %β ⁻ =0.056 11 T _{1/2} : from Adopted Levels.
137.08 7	9/2 ⁺		
365.03 9	5/2 ⁻	94 [@] ps 24	
528.09 19	3/2 ⁻	3.1 [@] ps +24-10	
572.18 18	5/2 ⁻	16 [@] ps +5-2	
630.08 14	5/2 ⁺		
728.50 20	5/2 ⁺		
790.48 10	(7/2 ⁻)		T _{1/2} : 13 ps +6-4 (from RDDS method for 790γ, 1991KuZY). But from DSA method for 653γ, 1988KuZP give 1.18 ps +35-21.
818.90 10	(7/2 ⁺)	0.76 ps +35-21	
897.25 10	11/2 ⁺	0.62 ps +14-7	
975.07 24	3/2 ⁻		
983.17 ^{&} 11	(≤7/2)		
1008.27 14	11/2 ⁺	1.2 ps +7-4	
1060.87 ^{&} 5			
1072.46 17	13/2 ⁺	0.83 ps +28-21	
1080.2 4	(3/2)		
1089.0 4	(3/2 ⁻)		
1110.13 13	(9/2 ⁺)	1.0 ps 3	T _{1/2} : from DSA method for 1110γ. From RDDS method for 291γ, T _{1/2} =1.3 ps 4.
1156 ^a 1	1/2 ⁺		
1231.39 19	(7/2 ⁺)	1.0 ps +4-3	
1253.7 3	5/2 ⁺	0.48 ps +35-21	T _{1/2} : other: 0.42 ps +21-14 (1988KuZP).
1256.92 15	(9/2 ⁻)	0.7 ps +4-3	T _{1/2} : from DSAM for 1120γ and 1256γ.
1312.2 3	(7/2 ⁻)	>0.21 ps	T _{1/2} : from DSAM for 784γ (1988KuZP).
1322.3 ^a 3	(5/2 ⁻)	0.42 ps +14-11	T _{1/2} : from DSAM for 750γ (1991KuZY). 750γ placed with a 2062 level by 1991KuZY .
1340.18 21	9/2 ⁻	0.62 ps +21-14	
1417.9 3	(7/2)		
1489.9 ^a 4	(9/2 ⁻)	0.21 ps +10-7	T _{1/2} : from DSAM for a 1123γ (1988KuZP). 1123γ placed with a 2760 level (1987FuZO, 1988KuZP).
1636.59 20	(13/2 ⁺)		
1667.9 ^a 3	(11/2 ⁺)		
1713.1 8			

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⁷⁶Ge($\alpha, n\gamma$) **1989PrZX, 1979Ze02, 1991KuZY** (continued)

⁷⁹Se Levels (continued)

E(level) [†]	J π [‡]	T _{1/2} [#]	Comments
1760.19?& 23			
1764 1		0.8 ps +4-3	E(level): level suggested by 1987FuZO and 1991KuZY.
1765.1 ^a 4	(11/2 ⁻)		
1797.7 ^a 5	(3/2)		
1934.2 ^a 5	(5/2)		
1935.8 ^a 4	(9/2 ⁺)		
1967.87 25	(13/2 ⁺)	0.35 ps +17-7	
2114.03 ^a 21	15/2 ⁺	0.42 ps +28-14	T _{1/2} : from DSAM for 1217 γ .
2182.15 24	(13/2 ⁻)	1.0 ps +7-4	Two separate levels near 2182 are suggested by 1987FuZO and 1991KuZY. T _{1/2} from DSAM for 925 γ (1991KuZY).
2182.4 ^a 4	(13/2 ⁻)	0.28 ps +21-14	T _{1/2} : DSAM for 842 γ (1991KuZY).
2210.4 ^a 4	(9/2 ⁺)		
2258.4 ^a 4	17/2 ⁺	0.7 ps +4-3	
2280.1 ^a 5	(11/2, 13/2)		
2303.5 ^a 5	(13/2 ⁻)		
2327.9 ^a 8	(15/2 ⁺)		
2739 1		0.49 ps +35-21	From 1987FuZO and 1991KuZY.
3611? 1			Level suggested by 1987FuZO.

[†] From least-squares fit to E γ data.

[‡] From Adopted Levels.

[#] Unless otherwise stated, values are from 1991KuZY (DSA method) based on data for the most intense transition from level.

@ From RDDS method (1991KuZY).

& Level suggested by 1979Ze02 only.

^a Level suggested by 1989PrZX only.

γ (⁷⁹Se)

A₂ and A₄ values given here are generally from 1989PrZX. These values are also available from 1979Ze02 and 1991KuZZ for most of the transitions. Consult ENSDF for values from 1979Ze02 and 1991KuZZ.

E γ [†]	I γ [†]	E _i (level)	J _i π	E _f	J _f π	Mult. [‡]	α^d	Comments
96.1& 2		95.98	1/2 ⁻	0.0	7/2 ⁺	E3	9.48	A ₂ =-0.02 17; A ₄ =+0.23 22 (1979Ze02) I γ : 6.8 5 (1979Ze02).
137.1 1	≈300	137.08	9/2 ⁺	0.0	7/2 ⁺			Mult.: from Adopted Gammas. A ₂ =-0.35 2; A ₄ =0.00 2 (1979Ze02) I γ : deduced from intensity balance at 137 level. The listed I γ values (1989PrZX) were corrected for angular distributions of γ rays involved in this balance. 1989PrZX give I γ (137 γ)=100 5. Other γ (θ): 1989PRZX. Additional information 1.
175.3 3	1.6 2	1072.46	13/2 ⁺	897.25	11/2 ⁺			A ₂ =-0.21 8; A ₄ =-0.04 9 I γ : 1.6 2 (1979Ze02).
^x 197.4@ 2								A ₂ =-0.13 4; A ₄ =+0.05 5 (1979Ze02)
^x 200.3@ 2								I γ : 2.6 2 (1979Ze02).
207.0 3	2.7 3	572.18	5/2 ⁻	365.03	5/2 ⁻			A ₂ =+0.38 8; A ₄ =-0.05 7 (1989PrZX)

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⁷⁶Ge($\alpha, n\gamma$) 1989PrZX, 1979Ze02, 1991KuZY (continued)

$\gamma(^{79}\text{Se})$ (continued)

E_γ^\dagger	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.‡	δ^\ddagger	Comments
213 ^c 1	≤3	1110.13	(9/2) ⁺	897.25	11/2 ⁺			A ₂ =+0.08 6; A ₄ =-0.34 9 (1979Ze02)
265 ^c 1	≤1	630.08	5/2 ⁺	365.03	5/2 ⁻			A ₂ =+0.009 10; A ₄ =+0.003 13 (1991KuZZ)
291.2 2	3.2 3	1110.13	(9/2) ⁺	818.90	(7/2 ⁺)	M1+E2	-1.2 8	I γ (213 γ)/I γ (291 γ)=1/1.1 (1979Ze02). I γ (265 γ)/I γ (493 γ)=1/4.8 (1979Ze02). A ₂ =-0.32 6; A ₄ =+0.02 7 A ₂ =-0.21 3; A ₄ =-0.02 4 (1991KuZZ)
^x 292.7@ 2								I γ : 1.4 2 (1979Ze02).
^x 295.3@ 2								A ₂ =+0.04 5; A ₄ =+0.07 6 (1979Ze02) I γ : 2.9 2 (1979Ze02).
^x 351.9@ 2								A ₂ =-0.73 15; A ₄ =+0.43 18 (1979Ze02) I γ : 1.2 1 (1979Ze02).
^x 354.6@ 2								A ₂ =-0.82 11; A ₄ =+0.08 13 (1979Ze02) I γ : 1.6 1 (1979Ze02).
365.0 1	54 3	365.03	5/2 ⁻	0.0	7/2 ⁺			A ₂ =+0.02 4; A ₄ =+0.03 5 A ₂ =-0.05 4; A ₄ =0.00 5 (1979Ze02)
425.4 2	7 1	790.48	(7/2 ⁻)	365.03	5/2 ⁻			A ₂ =-0.08 2; A ₄ =+0.002 20 (1991KuZZ) A ₂ =+0.52 8; A ₄ =+0.08 8 A ₂ =+0.42 11; A ₄ =-0.10 16 (1979Ze02)
^x 427.9@ 2								A ₂ =+0.34 14; A ₄ =-0.04 19 (1979Ze02) I γ : 2.1 2 (1979Ze02).
430.1@ ^e 5	#	1060.8?		630.08	5/2 ⁺			I γ : 0.4 (1979Ze02). Unresolved from 432 γ .
432.1 1	28 2	528.09	3/2 ⁻	95.98	1/2 ⁻			A ₂ =+0.06 4; A ₄ =-0.04 5 A ₂ =-0.02 6; A ₄ =-0.02 9 (1979Ze02) A ₂ =-0.005 20; A ₄ =0.0 (1991KuZZ)
^x 439.4@ 2								A ₂ =+0.16 13; A ₄ =-0.05 17 (1979Ze02) I γ : 3.2 2 (1979Ze02).
446.7 3	1.1 1	975.07	3/2 ⁻	528.09	3/2 ⁻			I γ : ≤1 (1979Ze02).
455@ 1		983.1?	(≤7/2)	528.09	3/2 ⁻			A ₂ =+0.32 4; A ₄ =-0.06 5
476.2 1	55 2	572.18	5/2 ⁻	95.98	1/2 ⁻	E2		A ₂ =+0.23 4; A ₄ =-0.01 6 (1979Ze02) A ₂ =+0.21 2; A ₄ =-0.03 1 (1991KuZZ)
^x 488.9@ 2								I γ : 0.8 2 (1979Ze02).
492.9 2	5 1	630.08	5/2 ⁺	137.08	9/2 ⁺			A ₂ =+0.12 6; A ₄ =-0.06 7 A ₂ =+0.13 5; A ₄ =-0.05 6 (1979Ze02) A ₂ =+0.10 8; A ₄ =+0.05 8 (1991KuZZ)
^x 495.5@ 2								I γ : 0.9 2 (1979Ze02).
^x 510.9@ 2								
^x 520.5@ 2								I γ : 1.3 2 (1979Ze02).
558 ^a		1667.9	(11/2 ⁺)	1110.13	(9/2) ⁺			
565 ^a		1636.59	(13/2 ⁺)	1072.46	13/2 ⁺			
596 ^a		1667.9	(11/2 ⁺)	1072.46	13/2 ⁺			
601.3 ^c 2	4.3 8	1231.39	(7/2 ⁺)	630.08	5/2 ⁺			A ₂ =-0.45 13; A ₄ =+0.42 16 (1979Ze02) I γ (601 γ)/I γ (1094 γ)=2.2/3.6 (1979Ze02).
^x 609.3@ 2								I γ : 1.6 3 (1979Ze02).
628 ^a		1156	1/2 ⁺	528.09	3/2 ⁻			
628.3 2	20 1	1636.59	(13/2 ⁺)	1008.27	11/2 ⁺	D+Q	-0.3 +1-3	A ₂ =-0.85 9; A ₄ =0.00 8 A ₂ =+0.05 4; A ₄ =-0.02 5 A ₂ =-0.19 9; A ₄ =-0.01 12 (1979Ze02)
630.0 2	25 2	630.08	5/2 ⁺	0.0	7/2 ⁺			A ₂ =-0.03 5; A ₄ =0.00 6 A ₂ =-0.04 17; A ₄ =+0.08 23 (1979Ze02) A ₂ =+0.05 3; A ₄ =0.00 3 (1991KuZZ)
653.4 1	13 1	790.48	(7/2 ⁻)	137.08	9/2 ⁺			
^x 657.3@ 2								A ₂ =-0.04 16; A ₄ =+0.29 21 (1979Ze02) I γ : 1.8 3 (1979Ze02).

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$^{76}\text{Ge}(\alpha, n\gamma)$ **1989PrZX, 1979Ze02, 1991KuZY (continued)** $\gamma(^{79}\text{Se})$ (continued)

E_γ †	I_γ †	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	δ^\ddagger	Comments
$^{x}663.5$ @ 2								$A_2=-0.02$ 13; $A_4=0.00$ 18 (1979Ze02) I_γ : 9.1 4 (1979Ze02).
681 ^a		1253.7	5/2 ⁺	572.18	5/2 ⁻			
681.8 1	22 1	818.90	(7/2 ⁺)	137.08	9/2 ⁺			$A_2=-0.23$ 4; $A_4=-0.02$ 5 $A_2=-0.19$ 13; $A_4=-0.05$ 18 (1979Ze02) $A_2=-0.40$ 3; $A_4=+0.03$ 3 (1991KuZZ)
692 & 1		1417.9	(7/2)	728.50	5/2 ⁺			I_γ : ≤ 1 (1979Ze02). Poor fit in level scheme.
704 @ 1		1713.1		1008.27	11/2 ⁺			I_γ : ≤ 1 (1979Ze02).
$^{x}708.9$ @ 2								$A_2=+0.74$ 13; $A_4=+0.46$ 17 (1979Ze02) I_γ : 12.7 6 (1979Ze02).
715.2 3	1.5 2	1080.2	(3/2)	365.03	5/2 ⁻			$A_2=-0.13$ 10; $A_4=+0.09$ 9
724.0 3	5 1	1089.0	(3/2 ⁻)	365.03	5/2 ⁻			
725.6 2	21 1	1253.7	5/2 ⁺	528.09	3/2 ⁻			$A_2=-0.17$ 4; $A_4=+0.04$ 5 $A_2=-0.15$ 10; $A_4=+0.08$ 13 (1979Ze02) $A_2=-0.18$ 3; $A_4=+0.06$ 3 (1991KuZZ)
728.6 & 2		728.50	5/2 ⁺	0.0	7/2 ⁺			$A_2=-0.09$ 17; $A_4=+0.46$ 21 (1979Ze02) $A_2=+0.22$ 9; $A_4=+0.05$ 7 (1991KuZZ) I_γ : 2.0 2 (1979Ze02).
739.3 3	≈ 12	1636.59	(13/2 ⁺)	897.25	11/2 ⁺			I_γ : see comment for 740.1 γ .
740.1 3	≈ 17	1312.2	(7/2 ⁻)	572.18	5/2 ⁻			$A_2=-0.41$ 16; $A_4=+0.05$ 21 (1979Ze02) I_γ : 29 2 for 739.3 γ +740.3 γ . Value given here is deduced from $I_\gamma(740\gamma)/I_\gamma(739\gamma)=5.0/3.5$ (1979Ze02).
750.0 3	2.9 3	1322.3	(5/2 ⁻)	572.18	5/2 ⁻			$\gamma(\theta)$ data for doublet. $A_2=+0.12$ 6; $A_4=+0.06$ 7 (1989PrZX) $A_2=-0.19$ 15; $A_4=-0.24$ 20 (1979Ze02) $A_2=-0.12$ 5; $A_4=+0.01$ 6 (1991KuZZ) A_2 value in 1989PrZX seems to be incorrect in sign. 750 γ placed with a 2062 level by 1979Ze02.
760.2 1	98 5	897.25	11/2 ⁺	137.08	9/2 ⁺	M1+E2	-0.3 +1-2	$A_2=-0.74$ 7; $A_4=0.00$ 6 $A_2=-0.80$ 8; $A_4=-0.02$ 9 (1979Ze02) $A_2=-0.69$ 2; $A_4=+0.03$ 1 (1991KuZZ) $A_2=+0.35$ 4; $A_4=-0.08$ 5 $A_2=+0.33$ 11; $A_4=-0.01$ 16 (1979Ze02) $A_2=+0.21$ 2; $A_4=-0.01$ 2 (1991KuZZ)
768.0 1	24 1	1340.18	9/2 ⁻	572.18	5/2 ⁻	E2		$I_\gamma(784\gamma)/I_\gamma(740\gamma)\approx 1/5.0$ (1981ZeZZ). Seen in $\gamma\gamma$ only (1979Ze02).
784 ^c 1	≤ 3	1312.2	(7/2 ⁻)	528.09	3/2 ⁻			$A_2=-0.29$ 6; $A_4=+0.04$ 7 $A_2=+0.31$ 4; $A_4=0.00$ 5 $A_2=+0.13$ 15; $A_4=-0.05$ 20 (1979Ze02) $A_2=+0.18$ 3; $A_4=+0.02$ 3 (1991KuZZ)
787.6 3	2.9 3	1417.9	(7/2)	630.08	5/2 ⁺			$A_2=-0.49$ 17; $A_4=+0.38$ 20 (1979Ze02)
790.5 2	18 1	790.48	(7/2 ⁻)	0.0	7/2 ⁺			$A_2=+0.05$ 5; $A_4=-0.06$ 6 $A_2=+0.08$ 14; $A_4=-0.04$ 18 (1979Ze02) $A_2=+0.04$ 9; $A_4=+0.04$ 9 (1991KuZZ)
794.4 3	3.4 4	1322.3	(5/2 ⁻)	528.09	3/2 ⁻			$A_2=+0.14$ 14; $A_4=+0.10$ 19 (1979Ze02)
818.9 2	9 1	818.90	(7/2 ⁺)	0.0	7/2 ⁺	(M1+E2)	-0.4 1	I_γ : 3.6 3 (1979Ze02). $A_2=+0.39$ 8; $A_4=-0.07$ 7 $A_2=+0.23$ 12; $A_4=-0.06$ 9 (1991KuZZ)
$^{x}834.4$ @ 2								$A_2=+0.28$ 6; $A_4=-0.09$ 7 $A_2=-0.73$ 7; $A_4=+0.09$ 5
842.2 3	5 1	2182.4	(13/2 ⁻)	1340.18	9/2 ⁻	E2		
848.9 3	5	1667.9	(11/2 ⁺)	818.90	(7/2 ⁺)	Q		
871.2 2	75 4	1008.27	11/2 ⁺	137.08	9/2 ⁺	M1+E2		

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⁷⁶Ge($\alpha, n\gamma$) **1989PrZX, 1979Ze02, 1991KuZY (continued)**

$\gamma(^{79}\text{Se})$ (continued)

E_γ †	I_γ †	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	δ^\ddagger	Comments
879.2 ^C 2	3.7 4	975.07	3/2 ⁻	95.98	1/2 ⁻			A ₂ =-0.79 13; A ₄ =+0.07 16 (1979Ze02) A ₂ =-0.69 2; A ₄ =+0.13 2 (1991KuZZ) A ₂ =-0.10 17; A ₄ =+0.08 22 (1979Ze02) I _{γ} (879 γ)/I _{γ} (447 γ) \approx 3.4/1 (1981ZeZZ). A ₂ =+0.88 13; A ₄ =-0.12 13 (1989PrZX) A ₂ =+0.19 11; A ₄ =-0.07 14 (1979Ze02) A ₂ values disagree.
891.9 2	14 1	1256.92	(9/2 ⁻)	365.03	5/2 ⁻			
895 ^a		1713.1		818.90	(7/2 ⁺)			
897.1 2	14 1	897.25	11/2 ⁺	0.0	7/2 ⁺	E2		A ₂ =+0.36 5; A ₄ =-0.09 6 A ₂ =+0.20 2; A ₄ =+0.02 2 (1991KuZZ)
925.2 3	5 1	2182.15	(13/2 ⁻)	1256.92	(9/2 ⁻)	E2		A ₂ =+0.30 6; A ₄ =-0.04 7 A ₂ =+0.25 3; A ₄ =-0.08 2 (1991KuZZ)
926 ^{@e} 1		1060.8?		137.08	9/2 ⁺			I _{γ} : \leq 1 (1981ZeZZ).
927.5 3	3.4 4	1935.8	(9/2 ⁺)	1008.27	11/2 ⁺			A ₂ =+0.07 6; A ₄ =+0.03 7
935.4 2	56 3	1072.46	13/2 ⁺	137.08	9/2 ⁺	E2		A ₂ =+0.35 4; A ₄ =-0.08 5 A ₂ =+0.24 9; A ₄ =+0.01 12 (1979Ze02) A ₂ =+0.22 2; A ₄ =-0.08 2 (1991KuZZ)
947 1	3.7 4	1312.2	(7/2 ⁻)	365.03	5/2 ⁻	M1+E2	-1.6 2	A ₂ =-0.83 17; A ₄ =+0.25 17
959.6 2	10 1	1967.87	(13/2 ⁺)	1008.27	11/2 ⁺			A ₂ =-0.88 13; A ₄ =-0.01 13 A ₂ =-0.71 3; A ₄ =-0.03 3 (1991KuZZ) A ₂ =+0.31 9; A ₄ =-0.34 11
963.3 4	2.4 3	2303.5	(13/2 ⁻)	1340.18	9/2 ⁻	Q		I _{γ} : 1.0 4 (1979Ze02). A ₂ =+0.30 4; A ₄ =-0.07 5 A ₂ =+0.32 10; A ₄ =+0.01 13 (1979Ze02)
969.7 [@] 2	#	1760.19?		790.48	(7/2 ⁻)			A ₂ =+0.36 7; A ₄ =-0.19 7 A ₂ =+0.34 5; A ₄ =-0.07 6 A ₂ =+0.38 15; A ₄ =+0.02 20 (1979Ze02) A ₂ =+0.20 3; A ₄ =-0.12 4 (1991KuZZ)
973.0 2	19 1	1110.13	(9/2 ⁺)	137.08	9/2 ⁺			I _{γ} : 2.9 6 (1979Ze02). A ₂ =-0.47 7; A ₄ =+0.04 6 A ₂ =-0.48 7; A ₄ =+0.02 7 A ₂ =+0.12 12; A ₄ =+0.33 14 (1979Ze02) A ₂ =-0.27 4; A ₄ =-0.12 4 (1991KuZZ) A ₂ =+0.48 7; A ₄ =+0.06 7 A ₂ =+0.46 14; A ₄ =-0.05 20 (1979Ze02) A ₂ =+0.30 6; A ₄ =-0.02 4 (1991KuZZ) A ₂ =+0.34 5; A ₄ =+0.04 6 A ₂ =+0.29 11; A ₄ =-0.09 14 (1979Ze02) A ₂ =+0.18 3; A ₄ =-0.04 4 (1991KuZZ) A ₂ =+0.34 10; A ₄ =-0.13 9 A ₂ =+0.13 10; A ₄ =-0.13 10 (1991KuZZ)
974.6 3	3.4 4	1765.1	(11/2 ⁻)	790.48	(7/2 ⁻)	Q		
1008.2 2	15 1	1008.27	11/2 ⁺	0.0	7/2 ⁺	E2		
^x 1039.5 [@] 2								
1041.6 2	13 1	2114.03	15/2 ⁺	1072.46	13/2 ⁺			
1094.3 3	7 1	1231.39	(7/2 ⁺)	137.08	9/2 ⁺			
1110.2 2	10 1	1110.13	(9/2 ⁺)	0.0	7/2 ⁺			
1119.8 3	8 1	1256.92	(9/2 ⁻)	137.08	9/2 ⁺			
1124.9 4	1.9 2	1489.9	(9/2 ⁻)	365.03	5/2 ⁻	E2		
1174 ^a		1312.2	(7/2 ⁻)	137.08	9/2 ⁺			
^x 1176.8 [@] 2								
1185.9 3	8 1	2258.4	17/2 ⁺	1072.46	13/2 ⁺	E2		I _{γ} : 1.0 2 (1979Ze02). A ₂ =+0.23 5; A ₄ =-0.06 6 A ₂ =+0.22 3; A ₄ =-0.06 3 (1991KuZZ) A ₂ =+0.25 2; A ₄ =-0.06 2 (1991KuZZ) A ₂ =-0.25 8; A ₄ =-0.02 9
1216.7 3	5 1	2114.03	15/2 ⁺	897.25	11/2 ⁺	E2		
1225.5 4	2 1	1797.7	(3/2)	572.18	5/2 ⁻			
1231.6 ^a		1231.39	(7/2 ⁺)	0.0	7/2 ⁺			
1255 ^a		2327.9	(15/2 ⁺)	1072.46	13/2 ⁺			Placed with a 3515 level (1987FuZO).
1256.9 3	11 1	1256.92	(9/2 ⁻)	0.0	7/2 ⁺			A ₂ =-0.22 5; A ₄ =+0.02 6 A ₂ =+0.02 12; A ₄ =+0.06 15 (1979Ze02) E _{γ} : most places in the thesis value listed is 1256.9 but in table 7 value is 1257.2 which is probably a misprint.

Continued on next page (footnotes at end of table)

$^{76}\text{Ge}(\alpha, n\gamma)$ **1989PrZX, 1979Ze02, 1991KuZY (continued)** $\gamma(^{79}\text{Se})$ (continued)

E_γ^\dagger	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	δ^{\ddagger}	Comments
^x 1265.1 @ 2								$A_2=+0.53$ 13; $A_4=+0.31$ 18 (1979Ze02) I_γ : 12.6 10 (1979Ze02).
1280 1	2.1 2	1417.9	(7/2)	137.08	9/2 ⁺			
1284.9 3	5 1	2182.15	(13/2 ⁻)	897.25	11/2 ⁺			$A_2=-0.17$ 7; $A_4=-0.04$ 7
1313.1 3	17 1	2210.4	(9/2 ⁺)	897.25	11/2 ⁺	M1+E2	+1.7 3	$A_2=-0.07$ 2; $A_4=-0.02$ 2 (1991KuZZ) $A_2=-0.87$ 9; $A_4=+0.11$ 9 E_γ : this γ placed from a 2570 level by 1979Ze02.
1320 1	3.0 3	2327.9	(15/2 ⁺)	1008.27	11/2 ⁺	Q		$A_2=+0.21$ 8; $A_4=-0.20$ 9 $A_2=+0.15$ 5; $A_4=-0.10$ 6 (1991KuZZ) Placed with a 3288 level (1987FuZO).
1353 ^{be}		3611?		2258.4	17/2 ⁺			
1362.0 4	2.8 3	1934.2	(5/2)	572.18	5/2 ⁻			
1382.8 4	2.3 3	2280.1	(11/2,13/2)	897.25	11/2 ⁺			
1626.9 ^b		1764		137.08	9/2 ⁺			$A_2=-0.21$ 2; $A_4=+0.07$ 2 (1991KuZZ) I_γ : 3.5 (1991KuZZ).
1666 ^b		2739		1072.46	13/2 ⁺			$A_2=-0.43$ 3; $A_4=+0.02$ 3 (1991KuZZ) I_γ : 0.8 (1991KuZZ).

[†] From 1989PrZX, unless otherwise stated. I_γ data are at 14 MeV and $\theta=90^\circ$ to the beam direction. Uncertainty of 5 to 20% is assigned on the advice of the author to the evaluator. 1989PrZX give excitation function data at $E(\alpha)=9, 10, 12, 14$ and 16 MeV for a large number of transitions. Intensities ≤ 1 are from $\gamma\gamma$ data.

[‡] From $\gamma(\theta)$ and RUL (for E2 and M2) for gammas from levels of measured $T_{1/2}$.

Doublet. Separate I_γ values obtained from unfolding spectrum taken at 90° (1979Ze02).

@ Reported by 1979Ze02 only.

& From 1979Ze02. I_γ at 12 MeV relative to 100 for 137 γ is given under comments.

^a From $\gamma\gamma$ (1989PrZX), intensity not available.

^b γ from 1987FuZO only. Intensity not available.

^c From 1979Ze02 only.

^d Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

^e Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

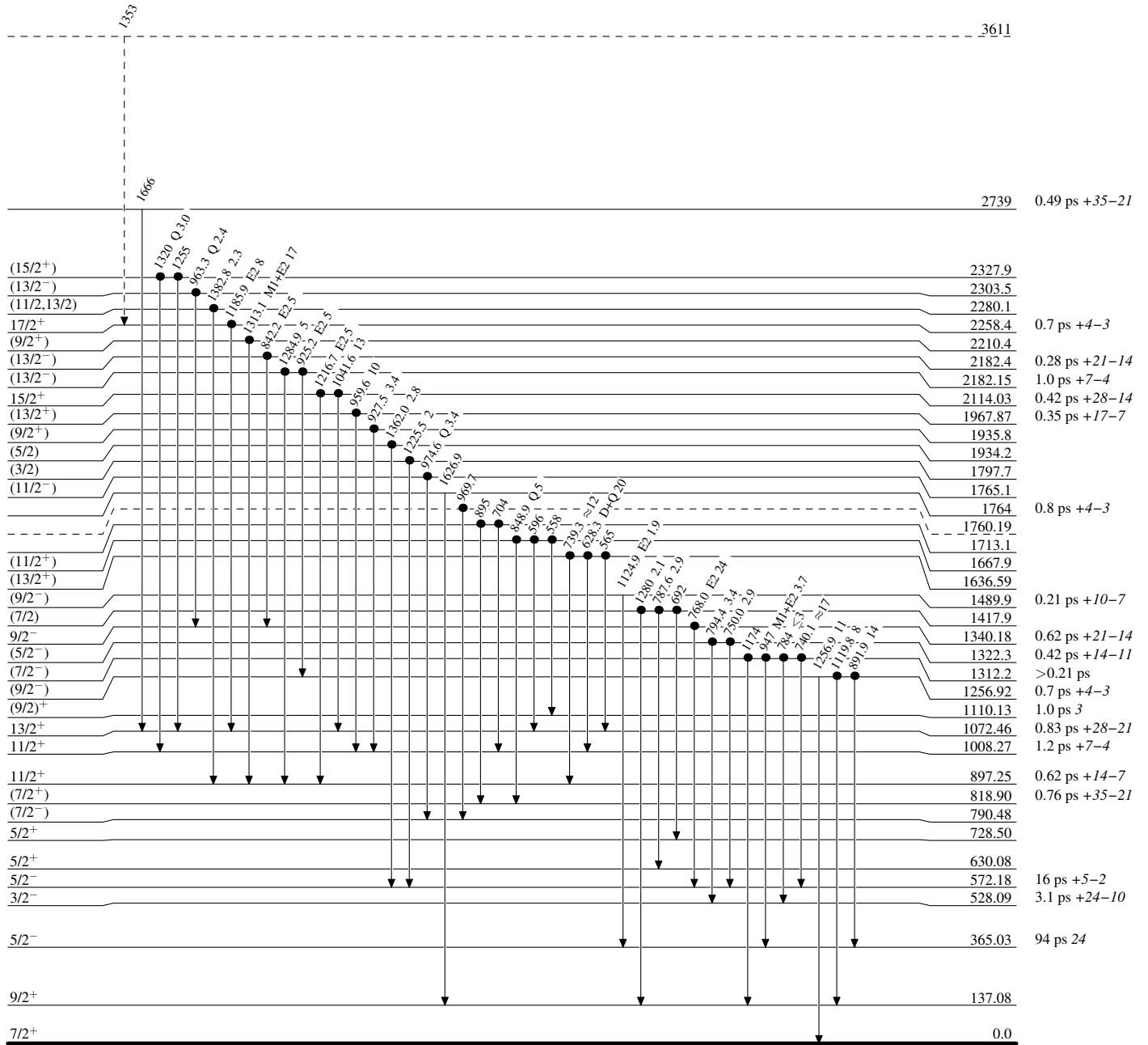
⁷⁶Ge(α,nγ) 1989PrZX,1979Ze02,1991KuZY

Legend

Level Scheme

Intensities: Relative I_γ

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}
- - - - - γ Decay (Uncertain)
- Coincidence



⁷⁹Se₃₄

⁷⁶Ge($\alpha, n\gamma$) 1989PrZX, 1979Ze02, 1991KuZY

Level Scheme (continued)

Intensities: Relative I _{γ}

Legend

- I _{γ} < 2% × I _{γ} ^{max}
- I _{γ} < 10% × I _{γ} ^{max}
- I _{γ} > 10% × I _{γ} ^{max}
- - - γ Decay (Uncertain)
- Coincidence

