

$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109, 1103 (2008)	1-Mar-2008

2000Ri11: E=310 MeV; 85.25% ^{96}Zr target; EUROBALL III array equipped with 30 Tapered and 15 Cluster Ge-detectors, all Compton-suppressed; measured $E\gamma$, $\gamma\gamma$ coin, $\gamma\gamma(\theta)$ (DCO, $\theta \approx 90^\circ$ and $\approx 154^\circ$).

 ^{166}Hf Levels

Quasiparticle orbitals used in band labels:

$\alpha=(\nu\ 5/2[642])$, $\alpha=+1/2$.

$\beta=(\nu\ 5/2[642])$, $\alpha=-1/2$.

$C=(\nu\ 3/2[651])$, $\alpha=+1/2$.

$D=(\nu\ 3/2[651])$, $\alpha=-1/2$.

$E=(\nu\ 5/2[523])$, $\alpha=+1/2$.

$F=(\nu\ 5/2[523])$, $\alpha=-1/2$.

$G=(\nu\ 3/2[521])$, $\alpha=+1/2$.

$H=(\nu\ 3/2[521])$, $\alpha=-1/2$.

$a=(\pi\ 7/2[404])$, $\alpha=+1/2$.

$b=(\pi\ 7/2[404])$, $\alpha=-1/2$.

$k=(\pi\ 1/2[660])$, $\alpha=+1/2$.

$e=(\pi\ 9/2[514])$, $\alpha=+1/2$.

$f=(\pi\ 9/2[514])$, $\alpha=-1/2$.

$g=(\pi\ 1/2[541])$, $\alpha=+1/2$.

E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]
0.0 [#]	0 ⁺	3023.9 ^a 18	12 ⁺	4514.3 ^g 20	18 ⁻	5672.7 ^b 22	21 ⁻
158.0 [#] 10	2 ⁺	3085.8 ^j 17	12 ⁻	4582.0 ^d 19	15 ⁻	5677.3 ^g 24	22 ⁻
470.0 [#] 13	4 ⁺	3209.0 [@] 18	14 ⁺	4622.9 ^f 22	19 ⁻	5687.1 ^e 21	20 ⁻
895.9 [#] 15	6 ⁺	3231.4 ^k 18	13 ⁻	4641.4 ⁱ 19	18 ⁻	5720.4 ^c 21	21 ⁻
1005.9 ^o 13	(3 ⁺)	3373.4 ^g 18	14 ⁻	4668.5 ^{&} 20	20 ⁺	5784.4 ^k 25	21 ⁻
1405.0 [#] 16	8 ⁺	3446.6 ^{&} 19	16 ⁺	4677.4 ^a 20	18 ⁺	5798.5 ⁿ 21	(21 ⁺)
1418.9 ^o 14	(5 ⁺)	3469.9 ^f 18	15 ⁻	4744.9 ^e 19	16 ⁻	5848.7 [@] 21	22 ⁺
1465.9 ^f 15	5 ⁻	3515.8 ^a 18	14 ⁺	4823.5 ^j 22	18 ⁻	5897.3 ⁱ 22	22 ⁻
1550.6 ^g 14	4 ⁻	3585.6 ^j 18	14 ⁻	4937.1 ^d 19	17 ⁻	5923.5 ^f 25	23 ⁻
1725.0 ^f 15	7 ⁻	3779.4 ^k 18	15 ⁻	5005.6 ^b 20	19 ⁻	5986.0 ^a 23	22 ⁺
1839.8 ^g 14	6 ⁻	3817.4 ^b 20	15 ⁻	5031.3 ^c 20	19 ⁻	5987.8 ^d 22	21 ⁻
1970.0 [#] 17	10 ⁺	3833.3 [@] 19	16 ⁺	5071.4 ^k 23	19 ⁻	6197.1 ^{&} 23	24 ⁺
2076.8 ^f 16	9 ⁻	3918.2 ^g 18	16 ⁻	5086.9 ^h 22	19 ⁻	6243 ^j 3	22 ⁻
2196.1 ^g 15	8 ⁻	3972.1 ^c 20	15 ⁻	5088.3 ^g 22	20 ⁻	6310.6 ^e 22	22 ⁻
2376.5 ^j 16	8 ⁻	4006.5 ^{&} 20	18 ⁺	5118.7 [@] 21	20 ⁺	6331.0 ^h 24	23 ⁻
2494.6 ^f 17	11 ⁻	4027.9 ^f 21	17 ⁻	5157.5 ⁿ 21	(19 ⁺)	6355 ^g 3	24 ⁻
2538.5 ^g 16	10 ⁻	4064.7 ^a 19	16 ⁺	5160.0 ^e 20	18 ⁻	6385.7 ^b 25	23 ⁻
2563.8 [#] 17	12 ⁺	4163.5 ^j 19	16 ⁻	5214.3 ⁱ 20	20 ⁻	6441.4 ^c 23	23 ⁻
2680.1 ^j 16	10 ⁻	4228.5 ⁱ 19	16 ⁻	5250.8 ^f 24	21 ⁻	6531 ^k 3	23 ⁻
2731.9 ^{&} 18	12 ⁺	4374.0 ^b 20	17 ⁻	5313.0 ^a 21	20 ⁺	6536.5 ⁿ 24	(23 ⁺)
2793.1 ^k 18	11 ⁻	4400.4 ^k 21	17 ⁻	5407.2 ^{&} 22	22 ⁺	6615.0 [@] 22	24 ⁺
2909.5 ^g 17	12 ⁻	4443.4 ^c 20	17 ⁻	5410.0 ^d 21	19 ⁻	6641.3 ⁱ 24	24 ⁻
2960.4 ^f 17	13 ⁻	4445.4 ^e 20	14 ⁻	5510.5 ^j 24	20 ⁻	6650.6 ^d 23	23 ⁻
3006.8 ^{&} 18	14 ⁺	4456.7 [@] 20	18 ⁺	5665.9 ^h 23	21 ⁻	6662 ^f 3	25 ⁻

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$^{96}\text{Zr}(^{74}\text{Ge}, 4n\gamma)$ **2000Ri11** (continued) ^{166}Hf Levels (continued)

E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]
6978 ^j 3	24 ⁻	8303 ⁱ 3	28 ⁻	10326 ^f 4	33 ⁻	759.0+x ^m 10
7006.6 ^e 23	24 ⁻	8373 ^f 3	29 ⁻	10721 ^b 4	33 ⁻	1064.1+x ^m 11
7026.1 ^{&} 25	26 ⁺	8426.4 ^e 25	28 ⁻	10742 ^{&} 4	34 ⁺	1387.7+x ^m 12
7078.2 ^h 25	25 ⁻	8767 ^h 3	29 ⁻	10933 [@] 3	34 ⁺	1734.9+x ^m 13
7136 ^g 3	26 ⁻	8797 ^{&} 3	30 ⁺	10994 ^g 4	34 ⁻	2095.8+x ^m 13
7145 ^b 3	25 ⁻	8808.1 ^d 25	29 ⁻	11298 ^f 4	35 ⁻	2475.9+x ^m 14
7199.4 ^c 25	25 ⁻	8817 ^b 3	29 ⁻	11751 ^{&} 4	36 ⁺	2860.7+x ^m 15
7314 ^k 3	25 ⁻	8871 ^c 3	29 ⁻	11928 [@] 4	36 ⁺	3256.1+x ^m 15
7342 ⁿ 3	(25 ⁺)	8976 ^g 4	30 ⁻	12005 ^g 4	36 ⁻	3665.0+x ^m 16
7363.6 ^d 23	25 ⁻	9116 [@] 3	30 ⁺	12289 ^f 4	37 ⁻	4083.1+x ^m 17
7392.1 [@] 23	26 ⁺	9212 ^e 3	30 ⁻	12762 ^{&} 4	38 ⁺	0.0+y ^l
7444 ⁱ 3	26 ⁻	9216 ⁱ 3	30 ⁻	13038 ^g 4	38 ⁻	204.0+y ^l 8
7478 ^f 3	27 ⁻	9335 ^f 4	31 ⁻	13328 ^f 4	39 ⁻	438.0+y ^l 8
7713.6 ^e 24	26 ⁻	9635 ^d 3	31 ⁻	13800 ^{&} 4	40 ⁺	697.0+y ^l 10
7770 ^j 3	26 ⁻	9682 ^h 3	31 ⁻	14096 ^g 4	40 ⁻	977.0+y ^l 11
7891 ^{&} 3	28 ⁺	9734 ^b 4	31 ⁻	14424 ^f 4	41 ⁻	1274.0+y ^l 12
7899 ^h 3	27 ⁻	9749 ^{&} 3	32 ⁺	14879 ^{&} 4	42 ⁺	1582.0+y ^l 13
7954 ^b 3	27 ⁻	9771 ^c 3	31 ⁻	15575 ^f 4	43 ⁻	1905.0+y ^l 13
8007 ^c 3	27 ⁻	9987 ^g 4	32 ⁻	16006 [?] 4	44 ⁺	2240.0+y ^l 14
8015 ^g 3	28 ⁻	10009 [@] 3	32 ⁺	0.0+x ^m		
8062.7 ^d 24	27 ⁻	10080 ^e 3	32 ⁻	236.0+x ^m 8		
8222.0 [@] 25	28 ⁺	10167 ⁱ 4	32 ⁻	486.0+x ^m 8		

[†] From least-squares fit to $E\gamma$, assigning 1 keV uncertainty to each datum.

[‡] Authors' values, based on band structure, alignment gains, B(M1)/B(E2) ratios and comparison with structures in neighboring nuclides.

Band(A): $K^\pi=0^+$ g.s. band.

@ Band(B): BC band.

& Band(C): AB band. Yrast above J=14. alignment gain $10\hbar$ At $\hbar\omega\approx 0.25$ MeV. Becomes ABCDfg band At high spin with possible admixture of ABEffg.

^a Band(D): EFBC band.

^b Band(E): AGEF band.

^c Band(F): AGEH band.

^d Band(G): $K^\pi=10^-$, $\alpha=0$ gFAE band (2000Ri11). Likely configuration: ν (5/2[642]+5/2[523])+ π (1/2[541]+9/2[514]); strongly supported by measured B(M1)/B(E2) ratios.

^e Band(g): $K^\pi=10^-$, $\alpha=1$ geAE band (2000Ri11). See comment on $K^\pi=10^-$ signature partner band.

^f Band(H): $K^\pi=5^-$ AE band.

^g Band(I): AF band.

^h Band(J): AGBC band. Large alignment, consistent with four-quasineutron structure.

ⁱ Band(K): AHBC band.

^j Band(L): BE band. Low alignment At low J.

^k Band(M): BF band.

^l Band(N): Band 1.

^m Band(O): Band 2.

ⁿ Band(P): Band 3.

^o Band(Q): $\pi=(+)$ band fragment.

$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ **2000Ri11** (continued) $\gamma(^{166}\text{Hf})$

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
137	4582.0	15 ⁻	4445.4	14 ⁻	
158	158.0	2 ⁺	0.0	0 ⁺	
163	4744.9	16 ⁻	4582.0	15 ⁻	
168	2731.9	12 ⁺	2563.8	12 ⁺	DCO=1.50 15.
192	4937.1	17 ⁻	4744.9	16 ⁻	
204	204.0+y		0.0+y		
223	5160.0	18 ⁻	4937.1	17 ⁻	
234	438.0+y		204.0+y		
236	236.0+x		0.0+x		
250	486.0+x		236.0+x		
250	5410.0	19 ⁻	5160.0	18 ⁻	
259	697.0+y		438.0+y		
259	1725.0	7 ⁻	1465.9	5 ⁻	
261	3469.9	15 ⁻	3209.0	14 ⁺	
273	759.0+x		486.0+x		
275	3006.8	14 ⁺	2731.9	12 ⁺	
277	5687.1	20 ⁻	5410.0	19 ⁻	
280	977.0+y		697.0+y		
289	1839.8	6 ⁻	1550.6	4 ⁻	
297	1274.0+y		977.0+y		
299	4744.9	16 ⁻	4445.4	14 ⁻	
301	5987.8	21 ⁻	5687.1	20 ⁻	
304	2680.1	10 ⁻	2376.5	8 ⁻	
305	1064.1+x		759.0+x		
308	1582.0+y		1274.0+y		
312	470.0	4 ⁺	158.0	2 ⁺	
320	1725.0	7 ⁻	1405.0	8 ⁺	
323	1387.7+x		1064.1+x		
323	1905.0+y		1582.0+y		
323	6310.6	22 ⁻	5987.8	21 ⁻	
335	2240.0+y		1905.0+y		
340	6650.6	23 ⁻	6310.6	22 ⁻	
342	2538.5	10 ⁻	2196.1	8 ⁻	
347	1734.9+x		1387.7+x		
349	8062.7	27 ⁻	7713.6	26 ⁻	
350	7713.6	26 ⁻	7363.6	25 ⁻	
352	2076.8	9 ⁻	1725.0	7 ⁻	
355	4937.1	17 ⁻	4582.0	15 ⁻	
356	2196.1	8 ⁻	1839.8	6 ⁻	
356	7006.6	24 ⁻	6650.6	23 ⁻	
357	7363.6	25 ⁻	7006.6	24 ⁻	
361	2095.8+x		1734.9+x		
364	8426.4	28 ⁻	8062.7	27 ⁻	
371	2909.5	12 ⁻	2538.5	10 ⁻	
374	1839.8	6 ⁻	1465.9	5 ⁻	
380	2475.9+x		2095.8+x		
382	8808.1	29 ⁻	8426.4	28 ⁻	
385	2860.7+x		2475.9+x		
396	3256.1+x		2860.7+x		
397	2960.4	13 ⁻	2563.8	12 ⁺	
404	9212	30 ⁻	8808.1	29 ⁻	
406	3085.8	12 ⁻	2680.1	10 ⁻	
409	3665.0+x		3256.1+x		
413	1418.9	(5 ⁺)	1005.9	(3 ⁺)	
413	3373.4	14 ⁻	2960.4	13 ⁻	

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$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11 (continued) $\gamma(^{166}\text{Hf})$ (continued)

E_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. †	Comments
413	4641.4	18 ⁻	4228.5	16 ⁻		
415	2909.5	12 ⁻	2494.6	11 ⁻		
415	5160.0	18 ⁻	4744.9	16 ⁻		
418	4083.1+x		3665.0+x			
418	2494.6	11 ⁻	2076.8	9 ⁻		
421	1839.8	6 ⁻	1418.9	(5 ⁺)		
423	9635	31 ⁻	9212	30 ⁻		
426	895.9	6 ⁺	470.0	4 ⁺		
438	438.0+y		0.0+y			
438	3231.4	13 ⁻	2793.1	11 ⁻		
440	3446.6	16 ⁺	3006.8	14 ⁺		
443	3006.8	14 ⁺	2563.8	12 ⁺	Q	DCO=0.96 2.
445#	10080	32 ⁻	9635	31 ⁻		
448	3918.2	16 ⁻	3469.9	15 ⁻		
460	3023.9	12 ⁺	2563.8	12 ⁺		
462	2538.5	10 ⁻	2076.8	9 ⁻		
464	3373.4	14 ⁻	2909.5	12 ⁻		
465	2960.4	13 ⁻	2494.6	11 ⁻		
471	2196.1	8 ⁻	1725.0	7 ⁻		
471	4443.4	17 ⁻	3972.1	15 ⁻		
473	5410.0	19 ⁻	4937.1	17 ⁻		
478	4641.4	18 ⁻	4163.5	16 ⁻		
484	2680.1	10 ⁻	2196.1	8 ⁻	Q	DCO=0.98 8.
486	486.0+x		0.0+x			
492	3515.8	14 ⁺	3023.9	12 ⁺		
493	697.0+y		204.0+y			
500	3585.6	14 ⁻	3085.8	12 ⁻		
509	1405.0	8 ⁺	895.9	6 ⁺		
509	3469.9	15 ⁻	2960.4	13 ⁻		
523	759.0+x		236.0+x			
524	2494.6	11 ⁻	1970.0	10 ⁺	D	DCO=1.68 22.
527	5687.1	20 ⁻	5160.0	18 ⁻		
536	1005.9	(3 ⁺)	470.0	4 ⁺		
537	2376.5	8 ⁻	1839.8	6 ⁻		
539	977.0+y		438.0+y			
545	1550.6	4 ⁻	1005.9	(3 ⁺)		
545	3918.2	16 ⁻	3373.4	14 ⁻		
547	3085.8	12 ⁻	2538.5	10 ⁻		
548	3779.4	15 ⁻	3231.4	13 ⁻		
549	4064.7	16 ⁺	3515.8	14 ⁺		
557	4374.0	17 ⁻	3817.4	15 ⁻		
558	4027.9	17 ⁻	3469.9	15 ⁻		
560	4006.5	18 ⁺	3446.6	16 ⁺		
562	5005.6	19 ⁻	4443.4	17 ⁻		
565	1970.0	10 ⁺	1405.0	8 ⁺		
573	5214.3	20 ⁻	4641.4	18 ⁻		
574	5088.3	20 ⁻	4514.3	18 ⁻		
577	1274.0+y		697.0+y			
578	1064.1+x		486.0+x			
578	4163.5	16 ⁻	3585.6	14 ⁻		
578	5987.8	21 ⁻	5410.0	19 ⁻		
579	5665.9	21 ⁻	5086.9	19 ⁻		
588	5031.3	19 ⁻	4443.4	17 ⁻		
589	5677.3	22 ⁻	5088.3	20 ⁻		
594	2563.8	12 ⁺	1970.0	10 ⁺		
595	4622.9	19 ⁻	4027.9	17 ⁻		

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$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11 (continued) $\gamma(^{166}\text{Hf})$ (continued)

E_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. †	Comments
596	4514.3	18 ⁻	3918.2	16 ⁻		
605	1582.0+y		977.0+y			
613	4677.4	18 ⁺	4064.7	16 ⁺		
621	4400.4	17 ⁻	3779.4	15 ⁻		
623	4456.7	18 ⁺	3833.3	16 ⁺		
623	6310.6	22 ⁻	5687.1	20 ⁻		
624	3833.3	16 ⁺	3209.0	14 ⁺		
628	5250.8	21 ⁻	4622.9	19 ⁻		
629	1387.7+x		759.0+x			
631	1905.0+y		1274.0+y			
632	5005.6	19 ⁻	4374.0	17 ⁻		
636	5313.0	20 ⁺	4677.4	18 ⁺		
641	5798.5	(21 ⁺)	5157.5	(19 ⁺)		
643	4228.5	16 ⁻	3585.6	14 ⁻		
645	3209.0	14 ⁺	2563.8	12 ⁺		
657	5031.3	19 ⁻	4374.0	17 ⁻		
658	2240.0+y		1582.0+y			
660	4823.5	18 ⁻	4163.5	16 ⁻		
662	4668.5	20 ⁺	4006.5	18 ⁺		
662	5118.7	20 ⁺	4456.7	18 ⁺		
663	6650.6	23 ⁻	5987.8	21 ⁻		
665	6331.0	23 ⁻	5665.9	21 ⁻		
667	5672.7	21 ⁻	5005.6	19 ⁻		
671	1734.9+x		1064.1+x			
671	5071.4	19 ⁻	4400.4	17 ⁻		
672	2076.8	9 ⁻	1405.0	8 ⁺		
673	5923.5	23 ⁻	5250.8	21 ⁻		
673	5986.0	22 ⁺	5313.0	20 ⁺		
678	6355	24 ⁻	5677.3	22 ⁻		
683	5897.3	22 ⁻	5214.3	20 ⁻		
687	5510.5	20 ⁻	4823.5	18 ⁻		
689	5720.4	21 ⁻	5031.3	19 ⁻		
696	7006.6	24 ⁻	6310.6	22 ⁻		
699	8062.7	27 ⁻	7363.6	25 ⁻		
700	5214.3	20 ⁻	4514.3	18 ⁻	Q	DCO=0.99 10.
707	7713.6	26 ⁻	7006.6	24 ⁻		
708	2095.8+x		1387.7+x			
713	5784.4	21 ⁻	5071.4	19 ⁻		
713	6385.7	23 ⁻	5672.7	21 ⁻		
713	7363.6	25 ⁻	6650.6	23 ⁻		
713	8426.4	28 ⁻	7713.6	26 ⁻		
716	2793.1	11 ⁻	2076.8	9 ⁻		
721	6441.4	23 ⁻	5720.4	21 ⁻		
723	4641.4	18 ⁻	3918.2	16 ⁻	Q	DCO=1.04 17.
730	5848.7	22 ⁺	5118.7	20 ⁺		
733	6243	22 ⁻	5510.5	20 ⁻		
735	6978	24 ⁻	6243	22 ⁻		
737	3231.4	13 ⁻	2494.6	11 ⁻	Q	DCO=0.96 8.
738	6536.5	(23 ⁺)	5798.5	(21 ⁺)		
739	5407.2	22 ⁺	4668.5	20 ⁺		
739	6662	25 ⁻	5923.5	23 ⁻		
741	2475.9+x		1734.9+x			
744	6641.3	24 ⁻	5897.3	22 ⁻		
745	8808.1	29 ⁻	8062.7	27 ⁻		
747	6531	23 ⁻	5784.4	21 ⁻		
747	7078.2	25 ⁻	6331.0	23 ⁻		

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$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ **2000Ri11** (continued) $\gamma(^{166}\text{Hf})$ (continued)

E_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. †	Comments
758	7199.4	25 ⁻	6441.4	23 ⁻		
759	7145	25 ⁻	6385.7	23 ⁻		
762	2731.9	12 ⁺	1970.0	10 ⁺		
765	2860.7+x		2095.8+x			
766	6615.0	24 ⁺	5848.7	22 ⁺		
777	7392.1	26 ⁺	6615.0	24 ⁺		
780	3256.1+x		2475.9+x			
781	7136	26 ⁻	6355	24 ⁻		
783	7314	25 ⁻	6531	23 ⁻		
786	9212	30 ⁻	8426.4	28 ⁻		
790	6197.1	24 ⁺	5407.2	22 ⁺		
792	7770	26 ⁻	6978	24 ⁻		
803	7444	26 ⁻	6641.3	24 ⁻		
804	3665.0+x		2860.7+x			
806	7342	(25 ⁺)	6536.5	(23 ⁺)		
808	8007	27 ⁻	7199.4	25 ⁻		
809	7954	27 ⁻	7145	25 ⁻		
811	3817.4	15 ⁻	3006.8	14 ⁺		
816	7478	27 ⁻	6662	25 ⁻		
819	3779.4	15 ⁻	2960.4	13 ⁻	Q	DCO=1.10 20.
821	7899	27 ⁻	7078.2	25 ⁻		
827	4083.1+x		3256.1+x			
827	9635	31 ⁻	8808.1	29 ⁻		
829	1725.0	7 ⁻	895.9	6 ⁺	D	DCO=1.77 23.
829	7026.1	26 ⁺	6197.1	24 ⁺		
830	8222.0	28 ⁺	7392.1	26 ⁺		
844	4677.4	18 ⁺	3833.3	16 ⁺		DCO=0.89 25.
848	1005.9	(3 ⁺)	158.0	2 ⁺		
856	4064.7	16 ⁺	3209.0	14 ⁺		DCO=0.8 3.
856	5313.0	20 ⁺	4456.7	18 ⁺		
859	8303	28 ⁻	7444	26 ⁻		
863	8817	29 ⁻	7954	27 ⁻		
864	8871	29 ⁻	8007	27 ⁻		
865	7891	28 ⁺	7026.1	26 ⁺		
867#	5986.0	22 ⁺	5118.7	20 ⁺		
867#	10080	32 ⁻	9212	30 ⁻		
868	8767	29 ⁻	7899	27 ⁻		
879	8015	28 ⁻	7136	26 ⁻		
893	10009	32 ⁺	9116	30 ⁺		
894	8373	29 ⁻	7478	27 ⁻		
894	9116	30 ⁺	8222.0	28 ⁺		
900	9771	31 ⁻	8871	29 ⁻		
906	8797	30 ⁺	7891	28 ⁺		
913	9216	30 ⁻	8303	28 ⁻		
915	9682	31 ⁻	8767	29 ⁻		
917	9734	31 ⁻	8817	29 ⁻		
924	10933	34 ⁺	10009	32 ⁺		
927	4374.0	17 ⁻	3446.6	16 ⁺		
944	1839.8	6 ⁻	895.9	6 ⁺		
949	1418.9	(5 ⁺)	470.0	4 ⁺		
951	10167	32 ⁻	9216	30 ⁻		
952	3515.8	14 ⁺	2563.8	12 ⁺		
952	9749	32 ⁺	8797	30 ⁺		
961	8976	30 ⁻	8015	28 ⁻		
962	9335	31 ⁻	8373	29 ⁻		

Continued on next page (footnotes at end of table)

$^{96}\text{Zr}(^{74}\text{Ge}, 4n\gamma)$ 2000Ri11 (continued) $\gamma(^{166}\text{Hf})$ (continued)

E_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. †	Comments
965	3972.1	15 ⁻	3006.8	14 ⁺		
972	11298	35 ⁻	10326	33 ⁻		
987	10721	33 ⁻	9734	31 ⁻		
991	10326	33 ⁻	9335	31 ⁻		
991	12289	37 ⁻	11298	35 ⁻		
993	10742	34 ⁺	9749	32 ⁺		
995	11928	36 ⁺	10933	34 ⁺		
996	1465.9	5 ⁻	470.0	4 ⁺		
997	4443.4	17 ⁻	3446.6	16 ⁺		
999	5005.6	19 ⁻	4006.5	18 ⁺		
1007	10994	34 ⁻	9987	32 ⁻		
1009	11751	36 ⁺	10742	34 ⁺		
1011	9987	32 ⁻	8976	30 ⁻		
1011	12005	36 ⁻	10994	34 ⁻		
1011	12762	38 ⁺	11751	36 ⁺		
1025	5031.3	19 ⁻	4006.5	18 ⁺	D	DCO=1.4 3, 1.6 4.
1033	13038	38 ⁻	12005	36 ⁻		
1038	13800	40 ⁺	12762	38 ⁺		
1039	13328	39 ⁻	12289	37 ⁻		
1043	5665.9	21 ⁻	4622.9	19 ⁻		DCO=1.1 3.
1052	5720.4	21 ⁻	4668.5	20 ⁺		
1054	3023.9	12 ⁺	1970.0	10 ⁺		
1058	14096	40 ⁻	13038	38 ⁻		
1059	5086.9	19 ⁻	4027.9	17 ⁻	(Q)	DCO=1.08 26.
1079	14879	42 ⁺	13800	40 ⁺		
1080	1550.6	4 ⁻	470.0	4 ⁺		
1080	6331.0	23 ⁻	5250.8	21 ⁻	Q	DCO=1.03 21.
1096	14424	41 ⁻	13328	39 ⁻		
1127 [#]	16006?	44 ⁺	14879	42 ⁺		
1130	5798.5	(21 ⁺)	4668.5	20 ⁺		
1151	5157.5	(19 ⁺)	4006.5	18 ⁺		
1151 [#]	15575?	43 ⁻	14424	41 ⁻		
1153 [#]	5160.0	18 ⁻	4006.5	18 ⁺		
1155	7078.2	25 ⁻	5923.5	23 ⁻		
1180	5848.7	22 ⁺	4668.5	20 ⁺		
1195	7392.1	26 ⁺	6197.1	24 ⁺		
1208	6615.0	24 ⁺	5407.2	22 ⁺		
1298	4744.9	16 ⁻	3446.6	16 ⁺	D	DCO=0.47 17 ($\Delta J=1$, D gate); DCO=1.01 22 ($\Delta J=2$ gate). Interpreted by authors As D, $\Delta J=0$ transition.
1373	4582.0	15 ⁻	3209.0	14 ⁺		
1491	4937.1	17 ⁻	3446.6	16 ⁺		DCO=0.86 22 ($\Delta J=1$, D gate).
1575	4582.0	15 ⁻	3006.8	14 ⁺		

† From DCO ratios measured using gates on $\Delta J=2$ transitions, (quadrupole gated), unless otherwise noted.

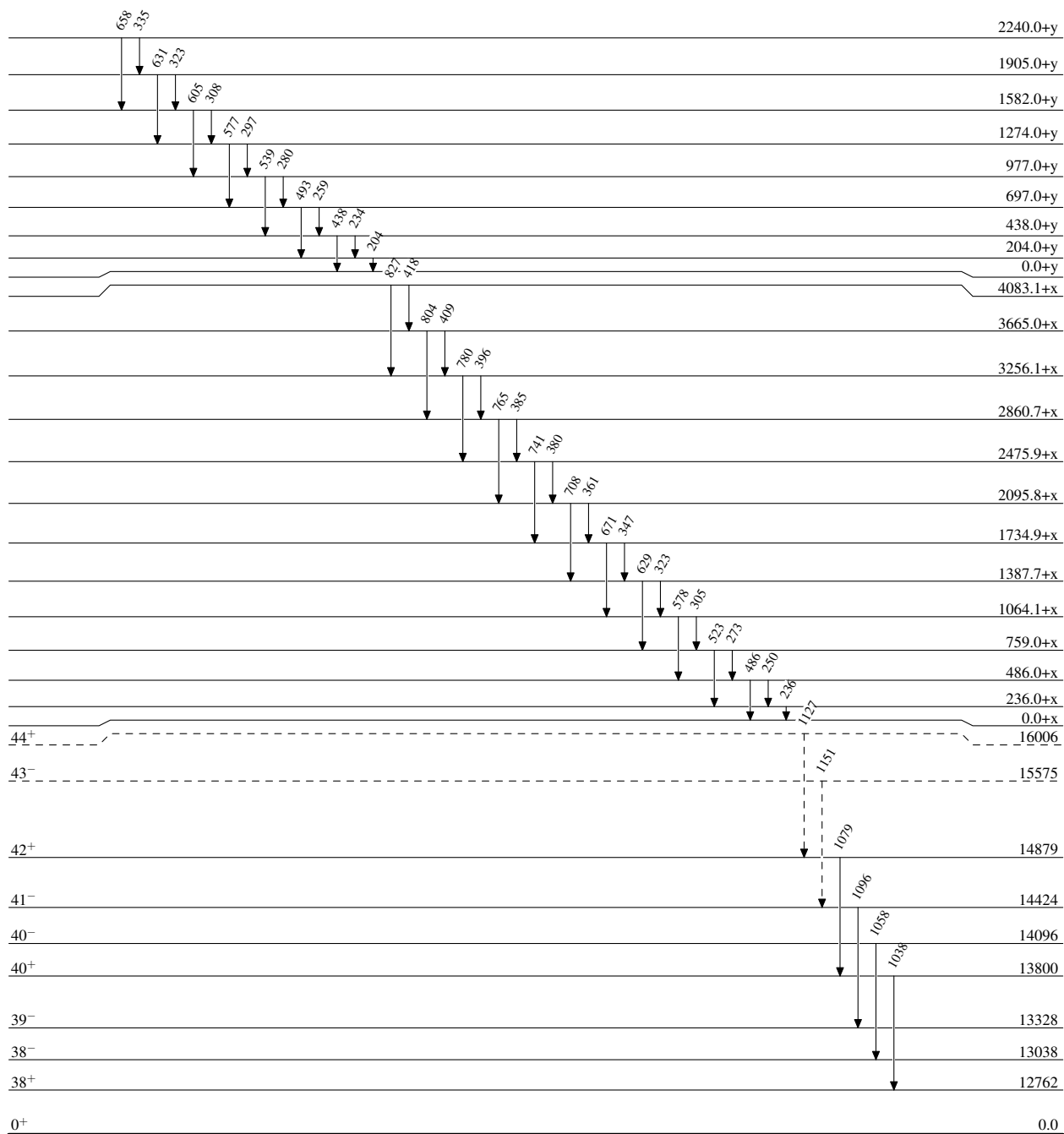
‡ Uncertainties unstated by authors.

$^\#$ Placement of transition in the level scheme is uncertain.

$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11

Legend

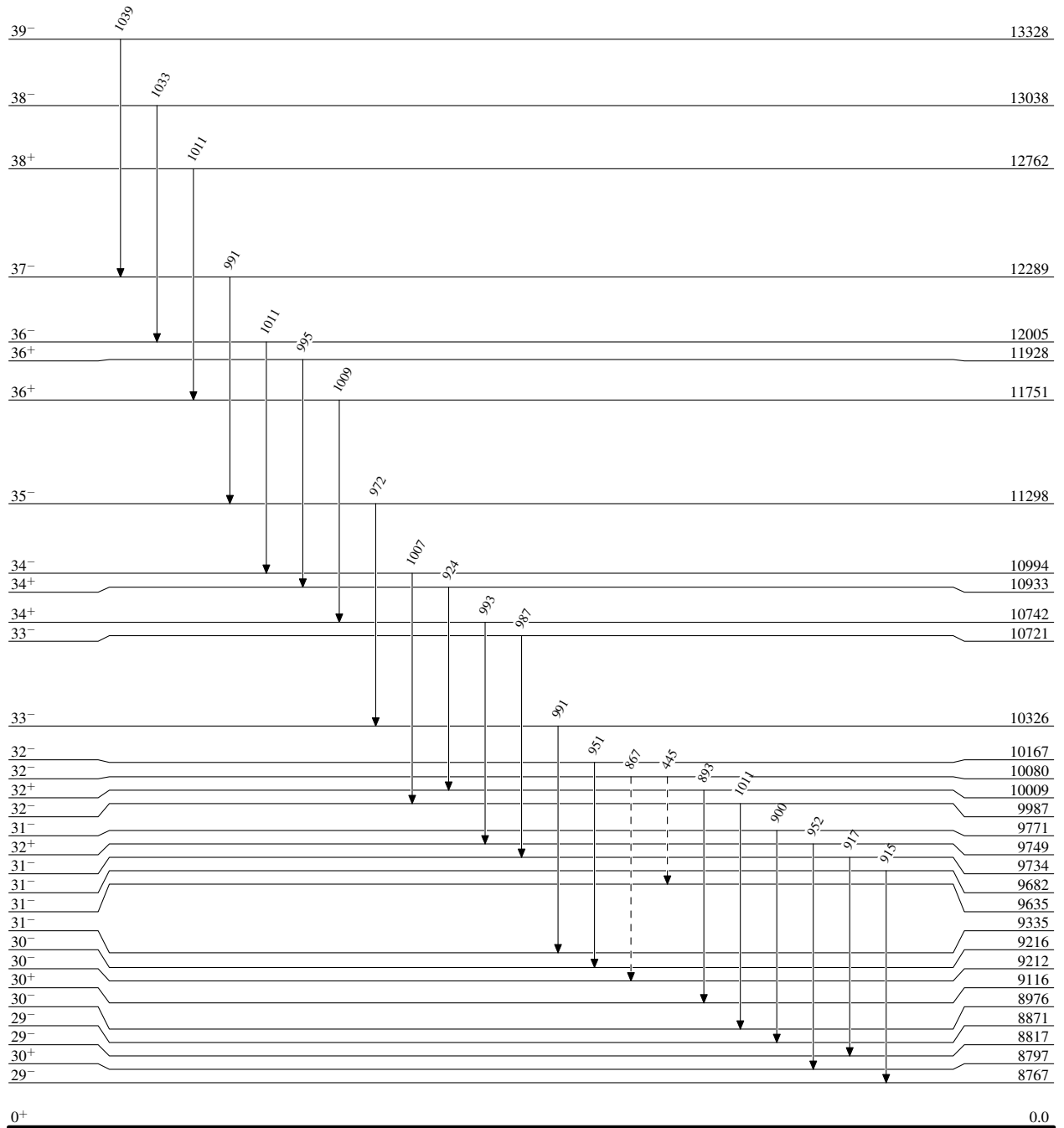
Level Scheme

-----► γ Decay (Uncertain)

 $^{166}_{72}\text{Hf}_{94}$

$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11

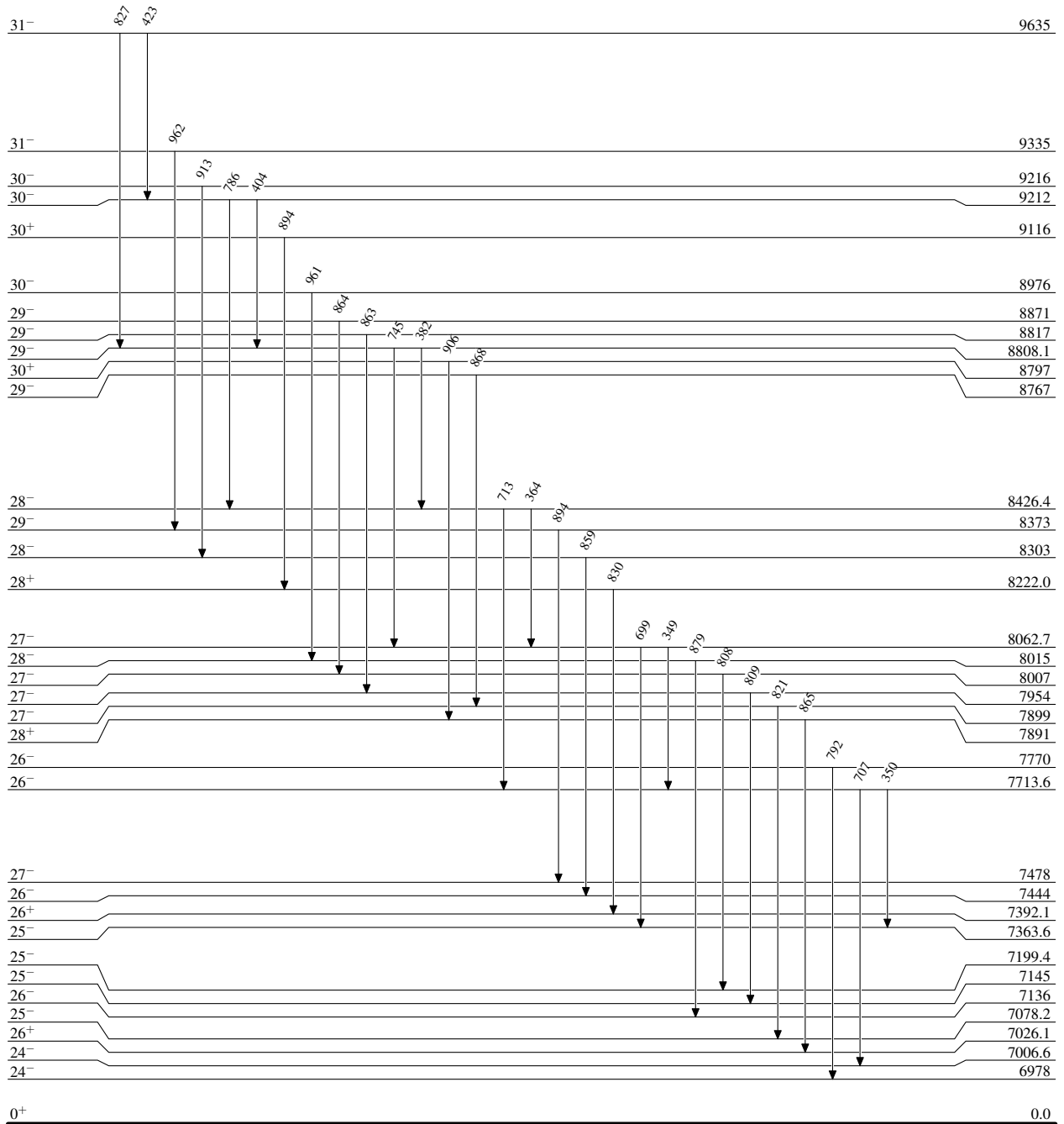
Legend

Level Scheme (continued)

-----► γ Decay (Uncertain) $^{166}_{72}\text{Hf}_{94}$

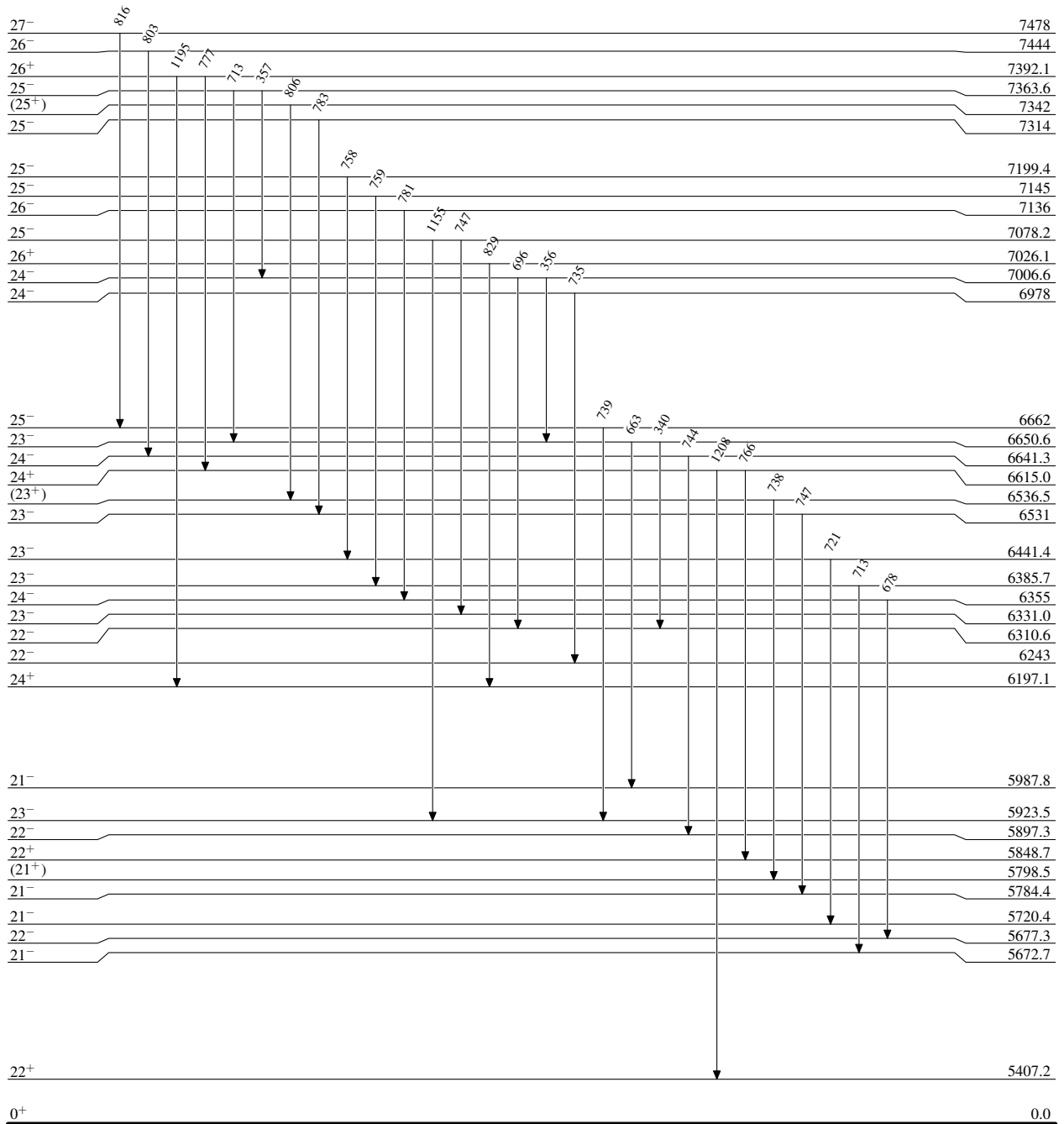
$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11

Level Scheme (continued)

 $^{166}_{72}\text{Hf}_{94}$

$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11

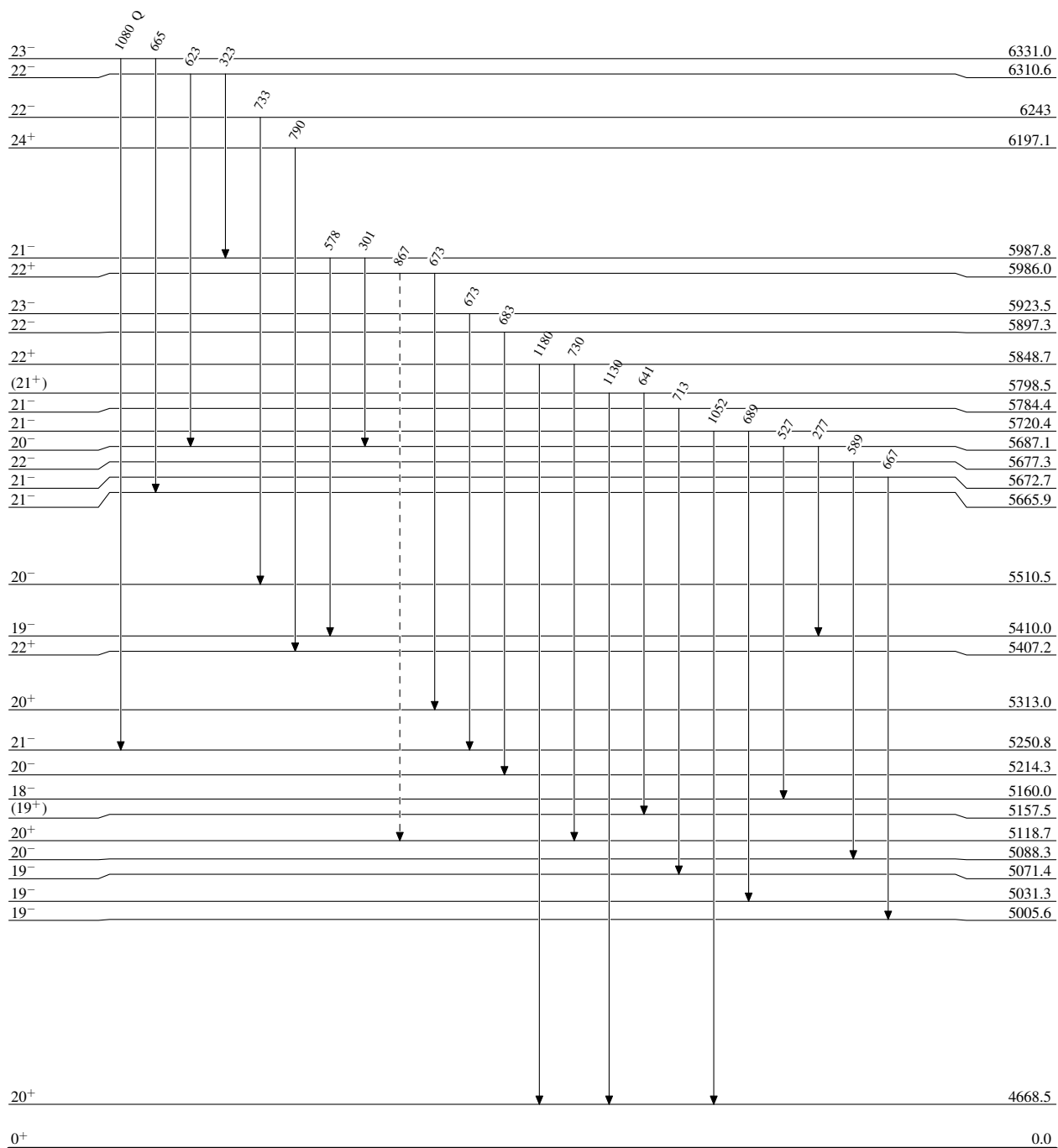
Level Scheme (continued)

 $^{166}_{72}\text{Hf}_{94}$

$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11

Legend

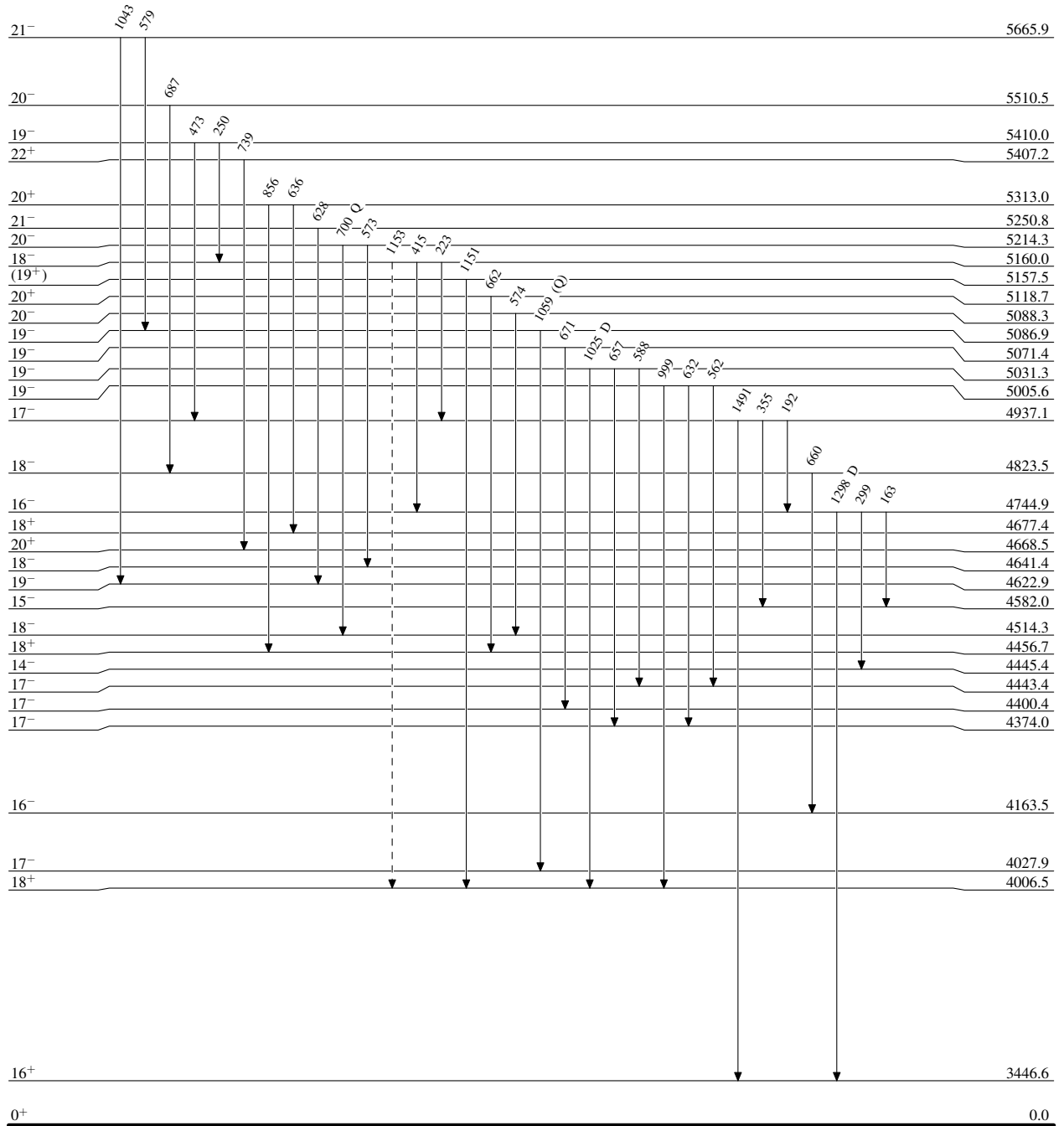
Level Scheme (continued)

-----► γ Decay (Uncertain) $^{166}_{72}\text{Hf}_{94}$

$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11

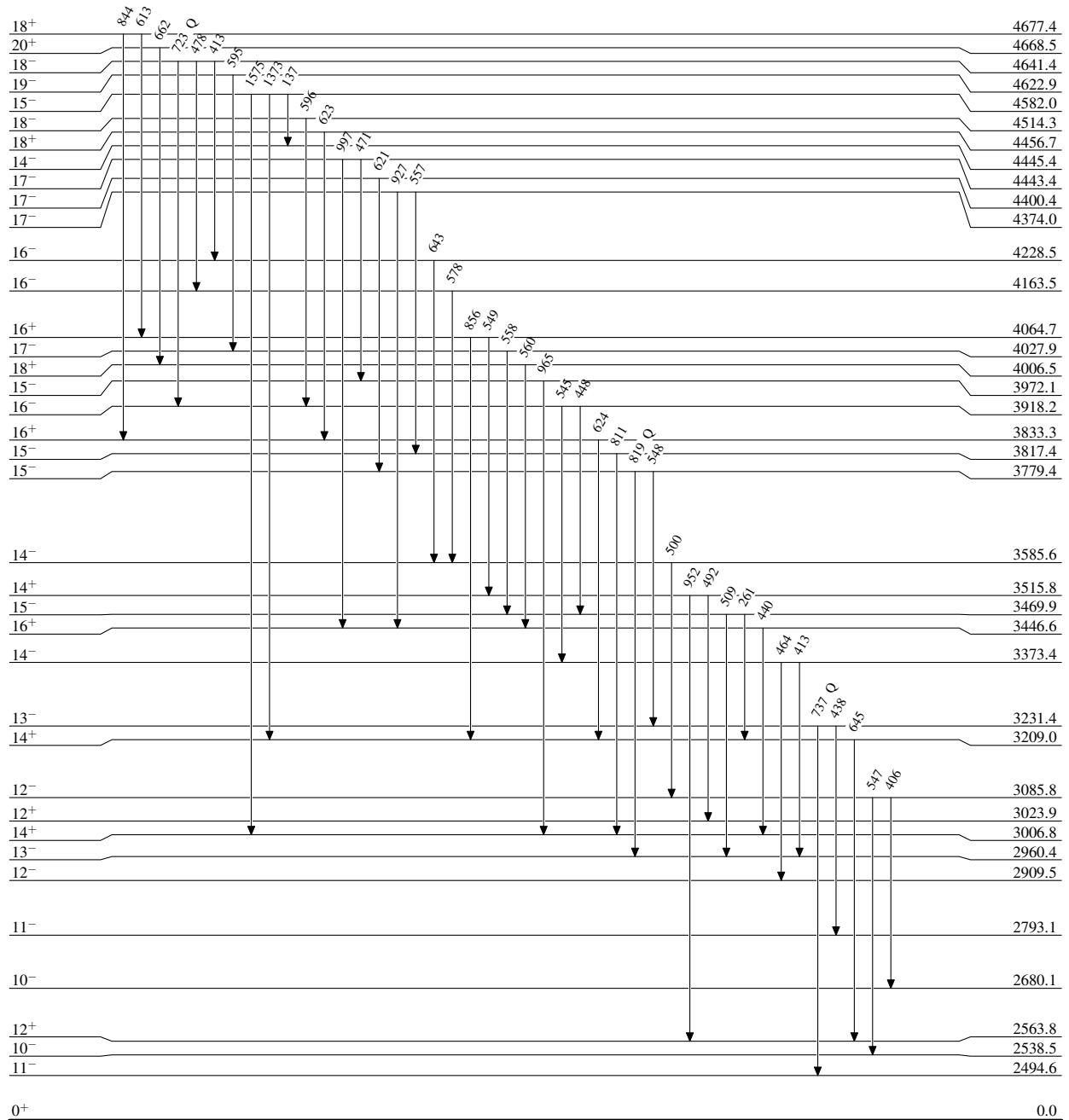
Legend

Level Scheme (continued)

-----► γ Decay (Uncertain) $^{166}_{72}\text{Hf}_{94}$

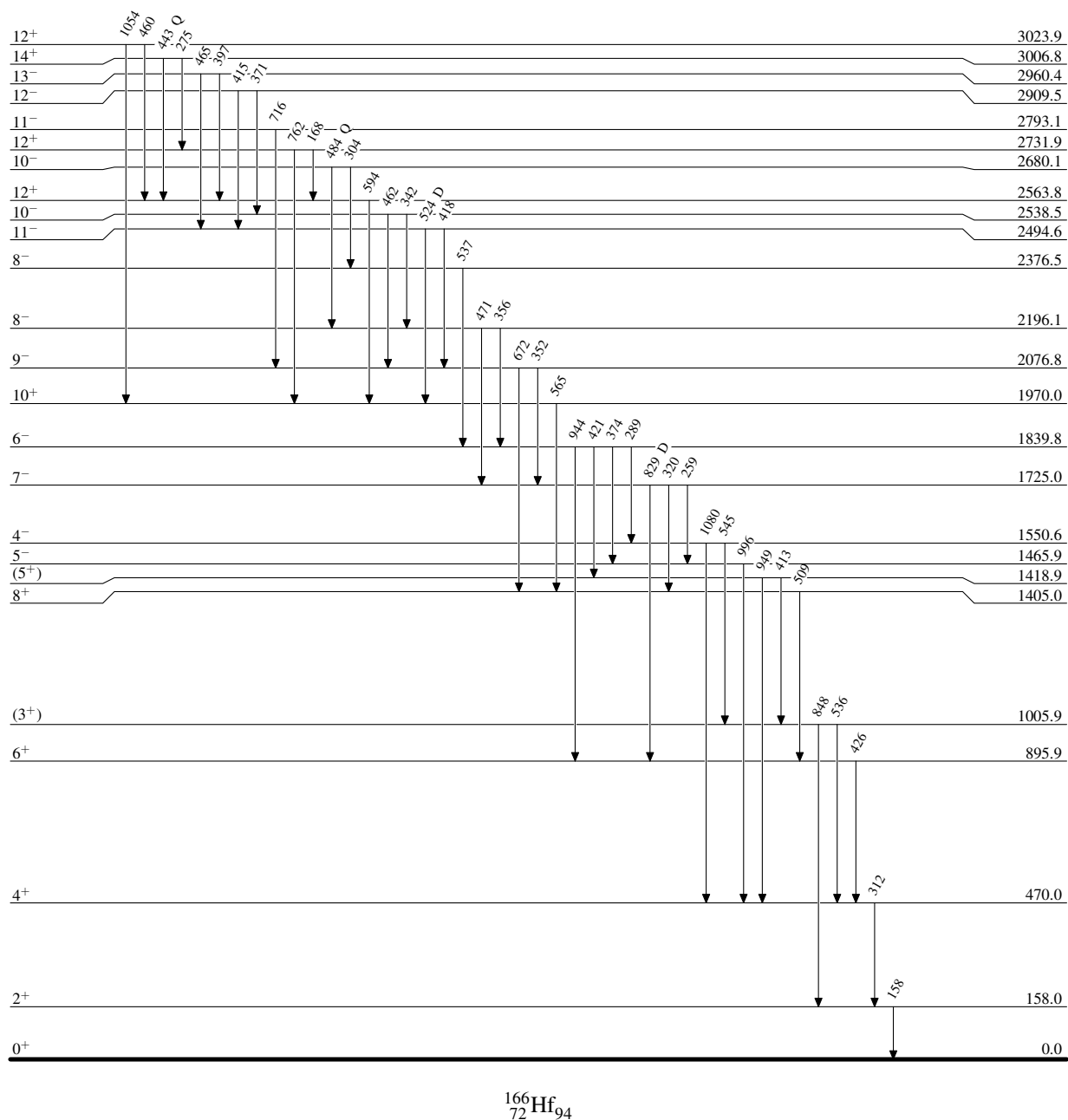
$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11

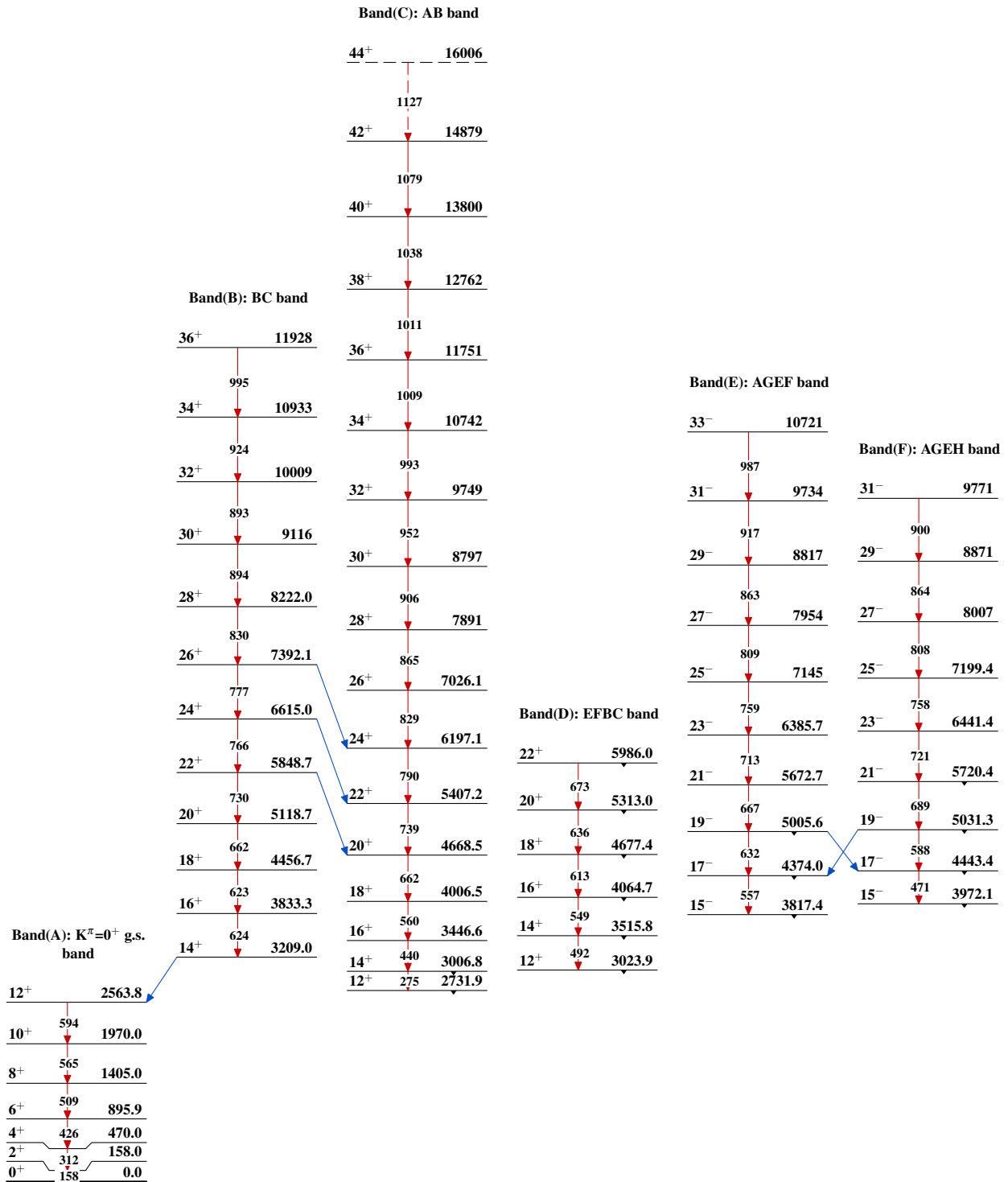
Level Scheme (continued)

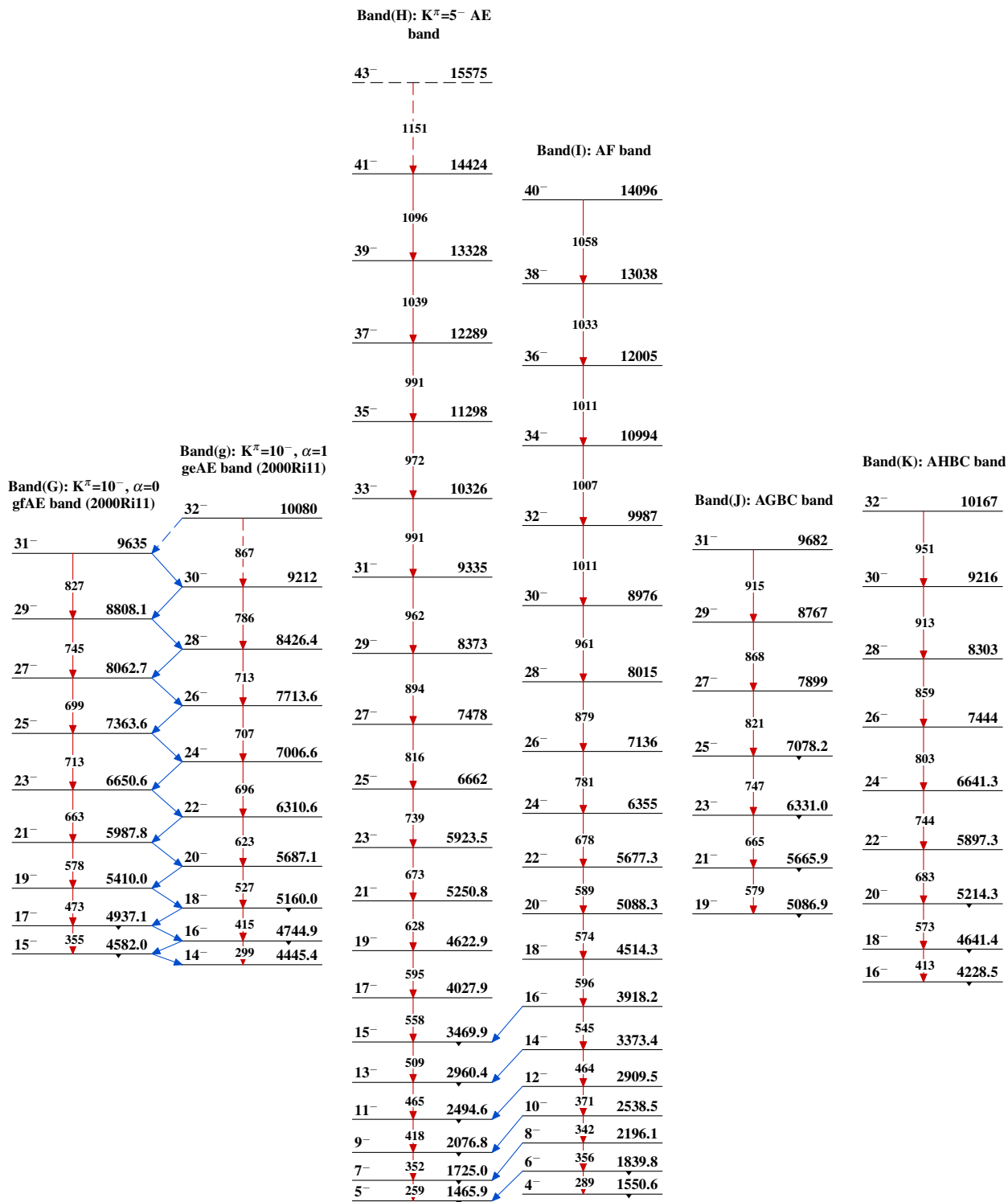
 $^{166}_{72}\text{Hf}_{94}$

$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11

Level Scheme (continued)



$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11

$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11 (continued)

$^{96}\text{Zr}(^{74}\text{Ge},4n\gamma)$ 2000Ri11 (continued)

Band(N): Band 1

		2240.0+y
	335	1905.0+y
	631	1582.0+y
	323	1274.0+y
	308	977.0+y
	297	697.0+y
	577	438.0+y
	280	204.0+y
	493	0.0+y
	204	

Band(O): Band 2

		4083.1+x
	418	3665.0+x
	804	3256.1+x
	396	2860.7+x
	385	2475.9+x
	765	2095.8+x
	380	1734.9+x
	708	1387.7+x
	347	1064.1+x
	629	759.0+x
	305	486.0+x
	523	236.0+x
	236	0.0+x

Band(L): BE band

26 ⁻	7770
	792
24 ⁻	6978
	735
22 ⁻	6243
	733
20 ⁻	5510.5
	687
18 ⁻	4823.5
	660
16 ⁻	4163.5
	578
14 ⁻	3585.6
	500
12 ⁻	3085.8
	406
10 ⁻	2680.1
	304
8 ⁻	2376.5

Band(M): BF band

25 ⁻	7314
	783
23 ⁻	6531
	747
21 ⁻	5784.4
	713
19 ⁻	5071.4
	671
17 ⁻	4400.4
	621
15 ⁻	3779.4
	548
13 ⁻	3231.4
	438
11 ⁻	2793.1

Band(P): Band 3

(25 ⁺)	7342
	806
(23 ⁺)	6536.5
	738
(21 ⁺)	5798.5
	641
(19 ⁺)	5157.5

Band(Q): $\pi=(+)$ band fragment

(5 ⁺)	1418.9
(3 ⁺)	413
	1005.9