^{192}Os(^{7}Li,5nγ) 2012Ga46

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 177, 1 (2021)	3-Sep-2021

2012Ga46: E=44 MeV ^{7}Li beam was provided by the HI-13 tandem accelerator at the China Institute of Atomic Energy in Beijing (CIAE). Enriched target=1.7 mg/cm^2 ^{192}Os. Gamma rays detected by an array of 14 Compton-suppressed HPGe detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma\gamma$(ADO). Deduced levels, J, π, bands, multipolarity, configurations. Comparison with total Routhian surface calculations.

Expected R_{ADO} values are >1.0 and <1.0 for stretched quadrupole (ΔJ=2, most likely E2) and dipole transitions (ΔJ=1, most likely E1 if pure or M1+E2 if an admixture), respectively.

^{194}Au Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	Comments
107.4[d]	(5$^+$)	600 ms *8*	Additional information 1. E(level): from Adopted Levels.
244.36[d] *9*	(7$^+$)		
278.24[c] *9*	(6$^+$)		
406.68[c] *10*	(8$^+$)		
475.7[&] *10*	(11$^-$)	420 ms *10*	
608.80[d] *17*	(9$^+$)		
618.6[@] *10*	(12$^-$)		
720.37 *20*	(9$^+$)		J$^\pi$: (9) in Adopted Levels.
840.2[&] *11*	(13$^-$)		
887.90[c] *21*	(10$^+$)		
1033.2[@] *11*	(14$^-$)		
1154.2[d] *4*	(11$^+$)		
1257.2 *5*	(10$^+$,11$^+$)		J$^\pi$: (10,11) in Adopted Levels.
1285.1[e] *11*	(14$^-$)		
1482.3[c] *4*	(12$^+$)		
1525.4[&] *11*	(15$^-$)		
1748.8[@] *11*	(16$^-$)		
1781.1[e] *12*	(16$^-$)		
1848.9[d] *5*	(13$^+$)		
2084.0 *11*	(14$^+$)		
2085.5[c] *5*	(14$^+$)		
2091.7[a] *11*	(15$^+$)		
2185.1[a] *11*	(16$^+$)		
2236.3[a] *11*	(17$^+$)		
2301.2[&] *11*	(17$^-$)		
2334.5[e] *14*			
2431.6[a] *11*	(19$^+$)		
2521.7[@] *11*	(18$^-$)		
2585.2 *11*	(19$^+$)		
2699.2[b] *11*	(20$^+$)		
2765.3[@] *11*	(20$^-$)		
2947.7[@] *11*	(22$^-$)		
2980.2[&] *12*	(19$^-$)		
3173.6[b] *12*	(22$^+$)		
3335.2[b] *12*	(22$^+$)		
3416.6[@] *12*	(24$^-$)		

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^{192}Os(^{7}Li,5nγ) 2012Ga46 (continued)

^{194}Au Levels (continued)

E(level)[†]	J$^{\pi}$[‡]
3656.0[b] *14*	
4216.4[@] *13*	(26$^-$)

[†] From a least-squares fit γ-ray energies, unless otherwise noted.
[‡] Proposed by 2012Ga46, based on their angular distribution data (R_{ADO} values) and γ cascades arranged as sequences. All assignments have been placed inside parentheses by evaluators due to lack of firm evidence. The same assignments are adopted in Adopted Levels.
[#] From Adopted Levels.
[@] Seq.(A): Sequence 1 based on (12$^-$). Configuration=$\pi h^{-1}_{11/2}\otimes\nu i^{-1}_{13/2}$, α=0; $\pi h^{-1}_{11/2}\otimes\nu i^{-3}_{13/2}$ above band crossing.
[&] Seq.(a): Sequence 2 based on (11$^-$). Configuration=$\pi h^{-1}_{11/2}\otimes\nu i^{-1}_{13/2}$, α=1. See signature partner.
[a] Seq.(B): Sequence 3 based on (15$^+$). Configuration=$\pi h^{-1}_{11/2}\otimes\nu i^{-2}_{13/2}\nu(p_{3/2}/f_{5/2})$.
[b] Seq.(C): Structure based on (20$^+$). Configuration=$\pi h^{-1}_{11/2}\otimes\nu i^{-2}_{13/2}\nu h^{-1}_{9/2}$.
[c] Seq.(D): Sequence 4 based on (6$^+$). Configuration=$\pi d^{-1}_{3/2}\otimes\nu i^{-1}_{13/2}$, α=0.
[d] Seq.(d): Sequence 5 based on (5$^+$). Configuration=$\pi d^{-1}_{3/2}\otimes\nu i^{-1}_{13/2}$, α=1.
[e] Seq.(E): Sequence 6 based on (14$^-$). Possible configuration=$\pi h^{-1}_{11/2}\otimes\nu i^{-1}_{13/2}$.

γ(^{194}Au)

E$_\gamma$[†]	I$_\gamma$[†‡]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[#]	Comments
(7.6)		2091.7	(15$^+$)	2084.0	(14$^+$)		
(33.9)		278.24	(6$^+$)	244.36	(7$^+$)		
50.9 *7*	7 *2*	2236.3	(17$^+$)	2185.1	(16$^+$)		
(69.0)		475.7	(11$^-$)	406.68	(8$^+$)	[E3]	
93.4 *2*	4 *1*	2185.1	(16$^+$)	2091.7	(15$^+$)		
113.7 *3*	<1	2699.2	(20$^+$)	2585.2	(19$^+$)		
128.4 *1*	143 *9*	406.68	(8$^+$)	278.24	(6$^+$)		
137.0 *1*	96 *6*	244.36	(7$^+$)	107.4	(5$^+$)		
142.9 *1*	53 *3*	618.6	(12$^-$)	475.7	(11$^-$)		
162.3 *1*	50 *3*	406.68	(8$^+$)	244.36	(7$^+$)		
167.3 *3*	4 *1*	887.90	(10$^+$)	720.37	(9$^+$)		
170.8 *1*	132 *8*	278.24	(6$^+$)	107.4	(5$^+$)		
182.4 *2*	16 *2*	2947.7	(22$^-$)	2765.3	(20$^-$)	Q	R_{ADO}=1.25 *14*.
193.0 *1*	76 *4*	1033.2	(14$^-$)	840.2	(13$^-$)	D	R_{ADO}=0.82 *9*.
195.4 *2*	28 *2*	2431.6	(19$^+$)	2236.3	(17$^+$)	Q	R_{ADO}=1.43 *21*.
201.8 *3*	<3	608.80	(9$^+$)	406.68	(8$^+$)		
220.6 *3*	<2	2521.7	(18$^-$)	2301.2	(17$^-$)		
221.7 *1*	85 *7*	840.2	(13$^-$)	618.6	(12$^-$)	D	R_{ADO}=0.77 *8*.
223.4 *2*	19 *3*	1748.8	(16$^-$)	1525.4	(15$^-$)	D	R_{ADO}=0.80 *10*.
225.2 *4*	<1	1482.3	(12$^+$)	1257.2	(10$^+$,11$^+$)		
236.6 *3*	<2	2085.5	(14$^+$)	1848.9	(13$^+$)		
243.6 *2*	21 *3*	2765.3	(20$^-$)	2521.7	(18$^-$)	Q	R_{ADO}=1.37 *15*.
267.7 *2*	9 *2*	2699.2	(20$^+$)	2431.6	(19$^+$)	D	R_{ADO}=0.96 *14*.
279.3 *2*	<3	887.90	(10$^+$)	608.80	(9$^+$)		
313.6 *2*	9 *2*	720.37	(9$^+$)	406.68	(8$^+$)	D	R_{ADO}=0.67 *9*.
328.1 *2*	<3	1482.3	(12$^+$)	1154.2	(11$^+$)		
333.6 *2*	6 *2*	2765.3	(20$^-$)	2431.6	(19$^+$)	D	R_{ADO}=0.66 *8*.
343.0 *2*	9 *2*	2091.7	(15$^+$)	1748.8	(16$^-$)	D	R_{ADO}=0.74 *9*.
348.8 *2*	6 *1*	2585.2	(19$^+$)	2236.3	(17$^+$)	Q	R_{ADO}=1.37 *21*.
364.5 *2*	100 *9*	840.2	(13$^-$)	475.7	(11$^-$)	Q	R_{ADO}=1.44 *15*.

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^{192}Os(^{7}Li,5nγ) 2012Ga46 (continued)

$\gamma(^{194}Au)$ (continued)

E_γ [†]	I_γ [†‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
364.7 *2*	21 *3*	608.80	(9^+)	244.36	(7^+)	Q	R_{ADO}=1.44 *16*.
414.3 *3*	42 *4*	1033.2	(14^-)	618.6	(12^-)	Q	R_{ADO}=1.44 *16*.
436.3 *4*	37 *3*	2185.1	(16^+)	1748.8	(16^-)	D	Mult.: ΔJ=0, dipole transition, consistent with R_{ADO}=1.56 *17*.
468.9 *5*	8 *2*	3416.6	(24^-)	2947.7	(22^-)	Q	R_{ADO}=1.62 *19*.
474.4 *5*	6 *1*	3173.6	(22^+)	2699.2	(20^+)	Q	R_{ADO}=1.45 *16*.
481.0 *5*	15 *2*	887.90	(10^+)	406.68	(8^+)	Q	R_{ADO}=1.38 *16*.
482.4 *6*	3 *1*	3656.0		3173.6	(22^+)		
487.2 *5*	7 *2*	2236.3	(17^+)	1748.8	(16^-)	D	R_{ADO}=0.93 *13*.
492.3 *5*	29 *2*	1525.4	(15^-)	1033.2	(14^-)	D	R_{ADO}=0.84 *9*.
496.0 *5*	5 *1*	1781.1	(16^-)	1285.1	(14^-)	Q	R_{ADO}=1.54 *21*.
536.9 *6*	4 *1*	1257.2	$(10^+,11^+)$	720.37	(9^+)		
544.9 *5*	10 *2*	1154.2	(11^+)	608.80	(9^+)	Q	R_{ADO}=1.51 *17*.
552.4 *5*	6 *1*	2301.2	(17^-)	1748.8	(16^-)		Mult.: ΔJ=1, dipole implied from ΔJ^π values is inconsistent with R_{ADO}=1.42 *20*.
553.4 *6*	<1	2334.5		1781.1	(16^-)		
566.3 *6*	7 *1*	2091.7	(15^+)	1525.4	(15^-)		
594.8 *5*	7 *1*	1482.3	(12^+)	887.90	(10^+)	Q	R_{ADO}=1.42 *18*.
603.2 *4*	6 *1*	2085.5	(14^+)	1482.3	(12^+)	Q	R_{ADO}=1.24 *14*.
636.0 *4*	9 *2*	3335.2	(22^+)	2699.2	(20^+)	Q	R_{ADO}=1.49 *17*.
666.5 *3*	13 *1*	1285.1	(14^-)	618.6	(12^-)	Q	R_{ADO}=1.19 *18*.
679.0 *5*	<3	2980.2	(19^-)	2301.2	(17^-)		
685.4 *3*	35 *4*	1525.4	(15^-)	840.2	(13^-)	Q	R_{ADO}=1.52 *17*.
694.7 *4*	9 *2*	1848.9	(13^+)	1154.2	(11^+)	Q	R_{ADO}=1.41 *17*.
715.7 *3*	80 *4*	1748.8	(16^-)	1033.2	(14^-)	Q	R_{ADO}=1.48 *15*.
773.0 *3*	29 *2*	2521.7	(18^-)	1748.8	(16^-)	Q	R_{ADO}=1.45 *16*.
776.0 *4*	6 *1*	2301.2	(17^-)	1525.4	(15^-)		
799.8 *5*	<3	4216.4	(26^-)	3416.6	(24^-)		
1058.3 *2*	38 *3*	2091.7	(15^+)	1033.2	(14^-)	D	R_{ADO}=0.87 *9*.
1243.8 *3*	9 *2*	2084.0	(14^+)	840.2	(13^-)	D	R_{ADO}=0.85 *11*.

[†] From 2012Ga46.
[‡] Additional information 2.
[#] Multipolarities are not explicitly given by 2012Ga46, but implied by R_{ADO} value and their J^π assignments.

^{192}Os(^{7}Li,5nγ) 2012Ga46

Level Scheme

Intensities: Relative I_γ

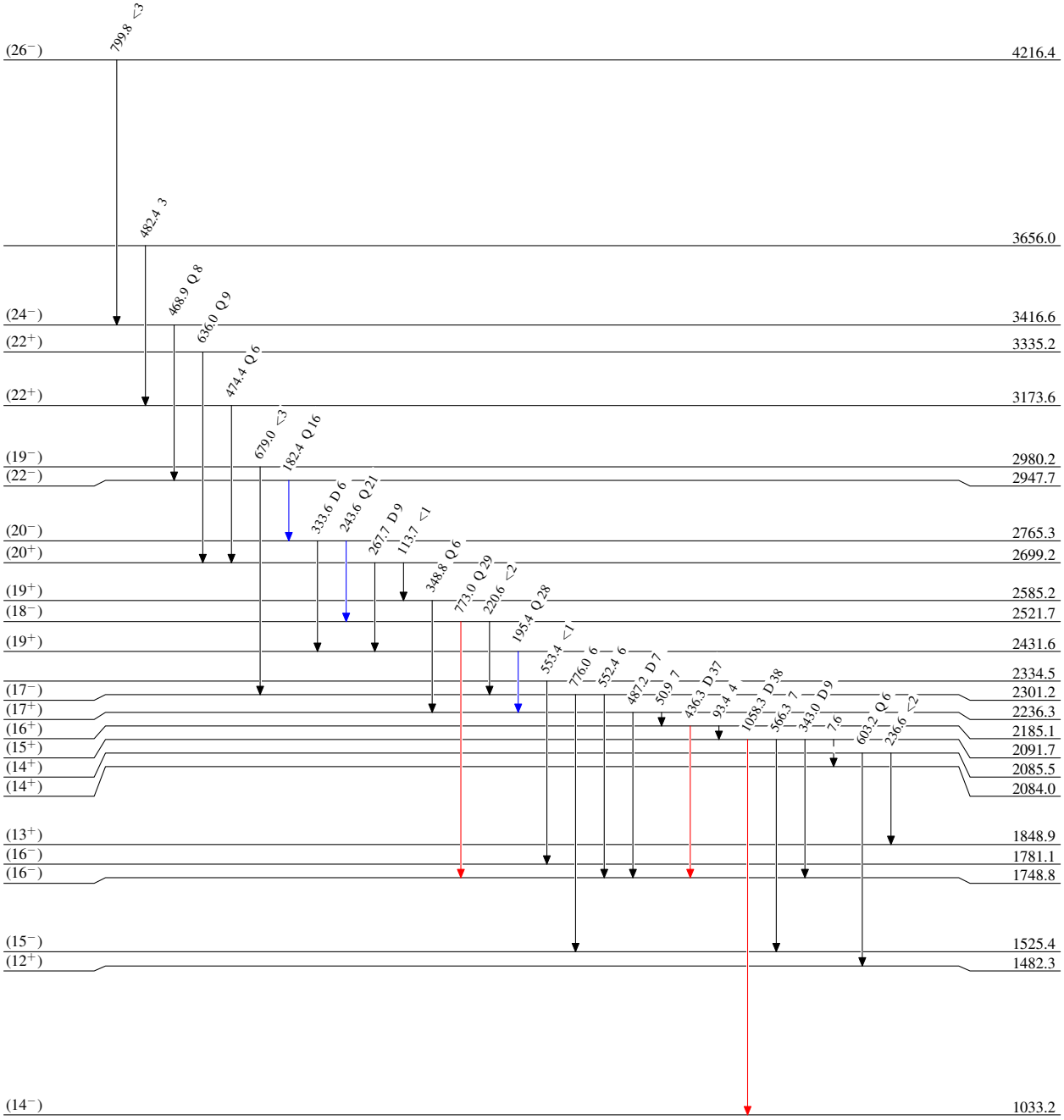
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



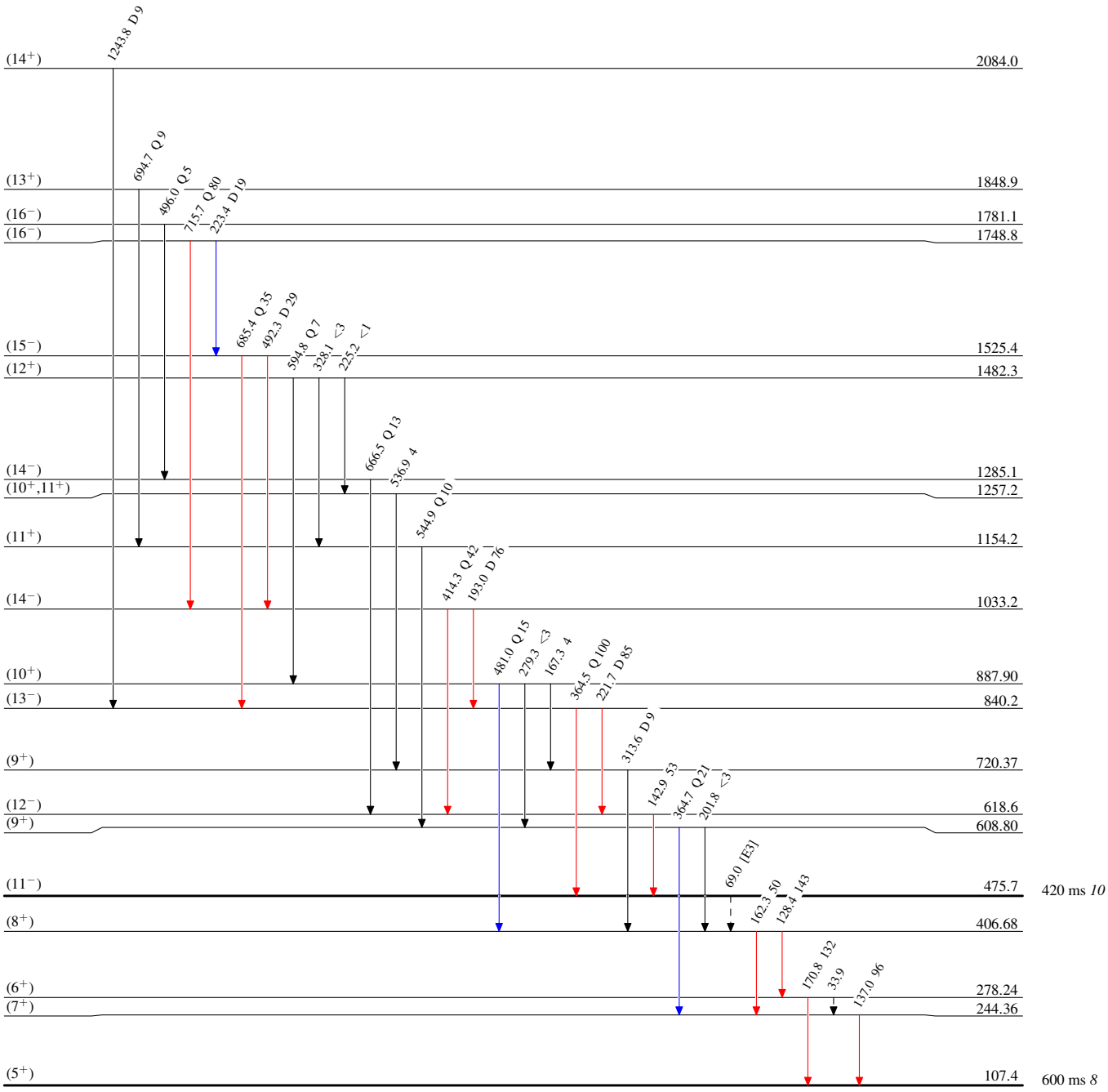
$^{194}_{79}Au_{115}$

^{192}Os(^{7}Li,5nγ) 2012Ga46

Level Scheme (continued)

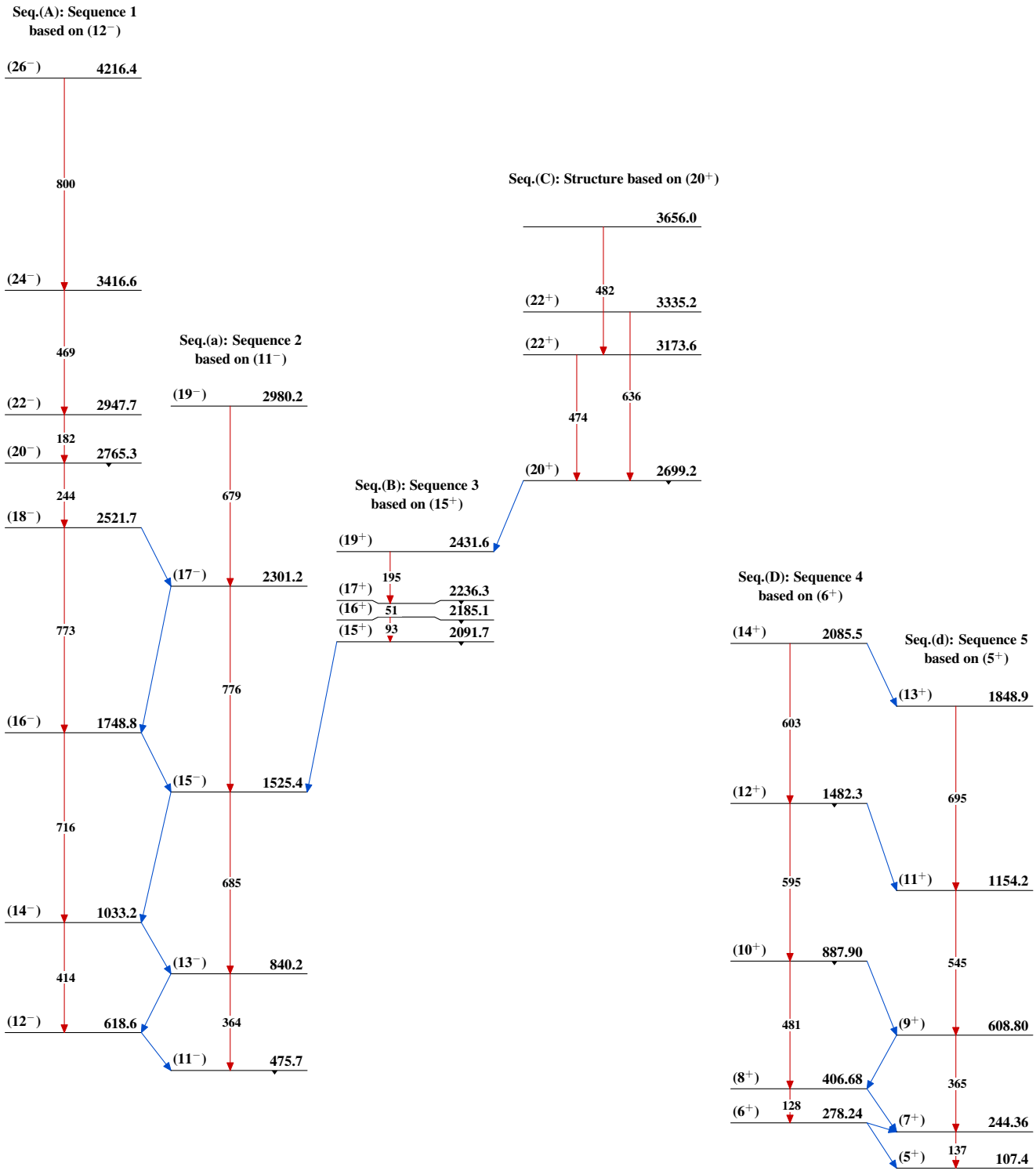
Intensities: Relative I_γ

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



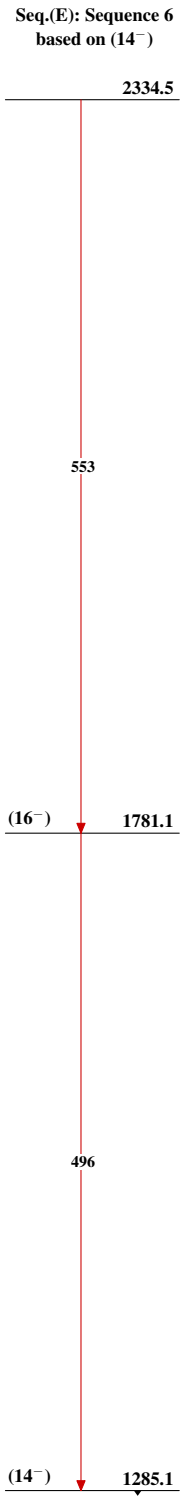
$^{194}_{79}Au_{115}$

^{192}Os(^{7}Li,5nγ) 2012Ga46



$^{194}_{79}Au_{115}$

^{192}Os(^{7}Li,5nγ) 2012Ga46 (continued)



$^{194}_{79}Au_{115}$