^{10}B(^{36}Ar,2nγ) 2011Ta33

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 190,1 (2023)	20-Jun-2023

2011Ta33: E=95 MeV beam was provided by ATLAS facility at ANL. Target was 0.25 mg/cm^2 ^{10}B. γ rays were detected with the Gammasphere array and recoils were selected using the fragment mass analyzer (FMA). Measured Eγ, Iγ, particle-γ coin, $\gamma\gamma$ coin. Deduced levels, J, π. Comparisons with theoretical calculations.

^{44}V Levels

E(level)[†]	J$^\pi$[‡]	Comments
0.0	(2)$^+$	J$^\pi$: from the Adopted Levels.
196.8 *1*	(1$^-$)	
0+x[#]	(6$^+$)	Additional information 1. E(level): x=266.2, deduced by 2011Ta33 from calculated mirror-energy difference (MED) of −5 keV between ^{44}V and ^{44}Sc. Energy of 6$^+$ isomer in ^{44}Sc is 271.2 keV in ^{44}Sc Adopted Levels. A value of 271 *9* is given in the Adopted Levels.
332.0 *4*	(4$^+$)	
368.85 *14*	(2$^-$)	E(level),J$^\pi$: mirror state of 234.7, 2$^-$, but branching ratios of the E1 and M1 transitions are different by a factor of at least 10 in the two nuclides.
564.8 *3*	(3$^-$)	
667.5 *8*	(3$^-$)	
773.4 *3*	(4$^-$)	
713.7+x[#] *5*	(7$^+$)	
1066.4 *13*	(5$^+$)	
1124.5 *7*	(4$^-$)	
1343.8 *10*	(5$^-$)	
2393.7+x[#] *17*	(9$^+$)	
3225.8+x[#] *18*	(11$^+$)	
3758.8+x[#] *20*	(10$^+$)	

[†] From a least-squares fit to Eγ data. Due to its poor fit, uncertainty of 194.8γ was doubled in the fitting procedure.
[‡] From 2011Ta33 for excited states, based on mirror symmetry with levels in ^{44}Sc.
[#] Seq.(A): γ sequence based on (6$^+$).

γ(^{44}V)

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
172.0 *1*	30 *1*	368.85	(2$^-$)	196.8	(1$^-$)	
194.8 *4*	20 *2*	564.8	(3$^-$)	368.85	(2$^-$)	Eγ: level-energy difference=195.90 *25*.
196.8 *1*	55 *17*	196.8	(1$^-$)	0.0	(2)$^+$	
208.4 *2*	10 *1*	773.4	(4$^-$)	564.8	(3$^-$)	
298.6 *8*	3 *1*	667.5	(3$^-$)	368.85	(2$^-$)	
332.2 *4*	32 *2*	332.0	(4$^+$)	0.0	(2)$^+$	
351.1 *9*	3 *1*	1124.5	(4$^-$)	773.4	(4$^-$)	
368.3 *4*	11 *1*	564.8	(3$^-$)	196.8	(1$^-$)	
369[†]	<6	368.85	(2$^-$)	0.0	(2)$^+$	Eγ,Iγ: γ not seen, only an upper limit is given. This is in contrast to 235-keV transition in ^{44}Sc from an analog level at 235 keV, where branching ratio of parity-conserving (166γ) to parity non-conserving transition (235γ) is 1:2.
405.4 *5*	7 *1*	773.4	(4$^-$)	368.85	(2$^-$)	
442.2 *8*	5 *1*	773.4	(4$^-$)	332.0	(4$^+$)	
533.0 *7*	11 *1*	3758.8+x	(10$^+$)	3225.8+x	(11$^+$)	
560.1 *9*	4 *1*	1124.5	(4$^-$)	564.8	(3$^-$)	

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^{10}B(^{36}Ar,2nγ) 2011Ta33 (continued)

γ(^{44}V) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π
570.2 *16*	2 *1*	1343.8	(5^-)	773.4	(4^-)	779.1 *12*	1 *1*	1343.8	(5^-)	564.8	(3^-)
713.7 *5*	100 *4*	713.7+x	(7^+)	0+x	(6^+)	832.0 *7*	44 *2*	3225.8+x	(11^+)	2393.7+x	(9^+)
734.4 *12*	11 *1*	1066.4	(5^+)	332.0	(4^+)	1680.0 *16*	46 *3*	2393.7+x	(9^+)	713.7+x	(7^+)
754.3 *20*	2 *1*	1124.5	(4^-)	368.85	(2^-)						

† Placement of transition in the level scheme is uncertain.

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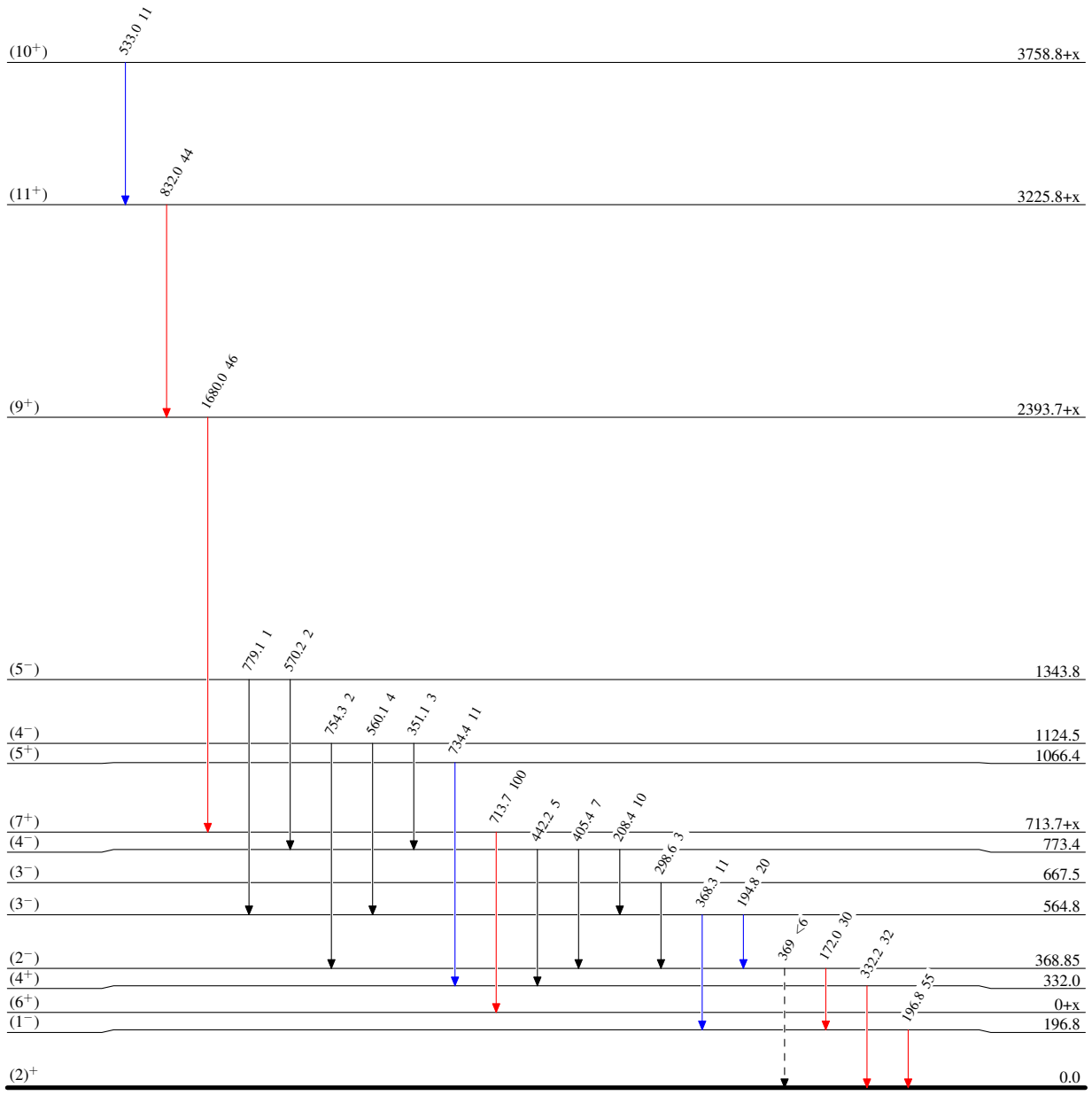
Level Scheme

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)



$^{44}_{23}V_{21}$

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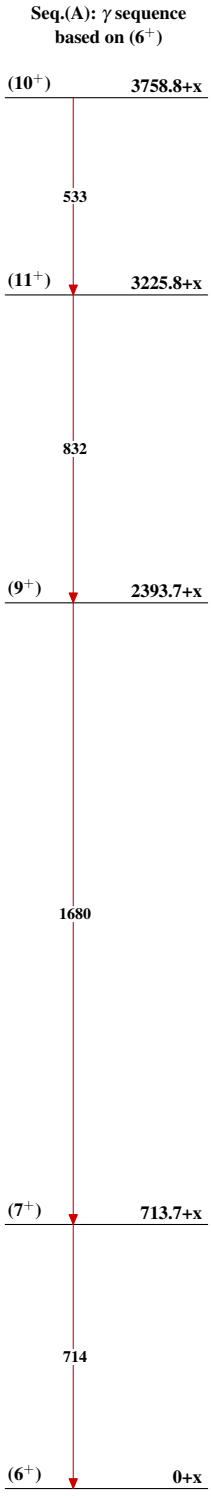

$^{44}_{23}V_{21}$