^{23}Na(pol d,p)   2004To03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia, Anagha Chakraborty	NDS 186, 2 (2022)	31-Mar-2022

$J^{\pi}(^{23}$Na$)=3/2^{+}$.

The reaction ^{23}Na(pol d,p) with the polarized deuteron beam of energy 17 MeV was used. The reaction was studied with the Q3D spectrograph. The total amount of 80 μg/cm^2 of NaF material (with 43.81 μg/cm^2 of ^{23}Na) was used on a 4.2 μg/cm^2 thick carbon backing. Energies and intensities of the emitted protons were measured with the 1.7 m long focal plane detector. Measured Ep, $\sigma(\theta)$. FWHM=5 keV to 8 keV from 12° to 50° of scattering angles. Also studied (n,γ) E=Thermal.

^{24}Na Levels

E(level)[‡]	J^{π}[#]	L[@]	Comments
0	$1^+,2^+,3^+,4^+$	2	
472.23 12	$1^+,2^+,3^+,4^+$	2	
563.08 19	$1^+,2^+$	0+2	
1341.25 34	$1^+,2^+$	0+2	
1346.37[†] 54		0+2	
1511.82 16	$3^+,4^+,5^+,6^+$	2+4	J^{π}: $3^+,4^+(5^+,6^+)$ in 2004To03.
1846.33 10	$1^+,2^+$	0+2	
1885.27 14	$2^+,3^+$	2	
2512.33 33	$2^+,3^+$	2	
2563.16 35	$1^+,2^+,3^+,4^+$	2	
2904.06 55	$2^+,3^+$	2	
2977.70 22	$1^+,2^+$	0+2	
3216.57 16	$2^+,3^+,4^+$	2+4	J^{π}: $2^+,3^+(4^+)$ in 2004To03.
3371.55 10	2^-	1	
3413.05 6	$1^+,2^+$	0+2	
3589.31 8	$1^+,2^+$	0+2	
3628.58 6	$2^+,3^+$	2	
3656.10 6	$1^+,2^+,3^+$	2	
3681.13 23	$0^+,1^+,2^+,3^+$	2	
3737.62? 22	$2^+,3^+,4^+$	2+4	
3745.07 13	3^-	1	
3884.85 32			
3933.60 13	1,2,3,4	2	
3943.57 8	$2^+,3^+$	2	
3976.95 29	$1^-,2^-$	1	
4048.25 20	$0^-,1^-,2^-$	1	
4142.59 21	$3^+,4^+,5^+,6^+$	4	
4187.30 12	$1^+,2^+,3^+,4^+$	2	
4196.42 16	$1^-,2^-$	1	
4207.03 8	$1^-,2^-$	1	
4441.75 10	2^-	1	
4526.87 24	$1^-,2^-,3^-$	1+3	
4559.07 18	$1^-,2^-,3^-$	1+3	
4621.12 19	2^-	1+3	
4693.30 15	3^-	1+3	
4750.78 17	2^-	1+3	
4889.31 18	3^- to 7^-	5	
4908.28 16	$2^+,3^+,4^+,5^+,6^+$	4	
4938.90 13	2^-	3	
4973.83 12	$1^-,2^-,3^-$	1+3	
5027.33 49	≥ 2	4	
5044.49 17	$1^-,2^-$	1+3	
5059.95 10	$2^-,(2^+,3^+)$	1+3	

<u>^{23}Na(pol d,p)   **2004To03** (continued)</u>

<u>^{24}Na Levels (continued)</u>

E(level)[‡]	J$^{\pi}$[#]	L[@]	Comments
5117.34 *8*	1$^+$,2$^+$	0	
5180.55 *13*	1$^-$,2$^-$,3$^-$	1+3	
5192.51 *14*	1$^-$,2$^-$,3$^-$	1+3	
5245.38 *12*	1$^-$,2$^-$,3$^-$	1+3	
5308.10 *19*	1$^-$,2$^-$,3$^-$	1+3	
5338.86 *10*	1$^-$,2$^-$,3$^-$	1+3	
5397.61? *34*			
5408.29 *24*	1$^+$,2$^+$	0	
5454.99 *21*	1,2,(3$^+$)	3	
5478.88 *21*	1$^-$,2$^-$	1+3	
5571.57 *19*	2$^+$,3$^+$,4$^+$	2+4	
5629.27 *71*		1+3	
5674.46 *27*	1$^+$,2$^+$	0	
5737.15 *16*	1$^-$,2$^-$,3$^-$	1+3	
5772.50 *42*	1$^-$,2$^-$,3$^-$	1+3	
5789.41? *93*	3$^+$,4$^+$,5$^+$,6$^+$	4	
5808.44 *13*	1$^-$,2$^-$	1+3	
5850.65 *16*	1$^-$,2$^-$,3$^-$	1+3	
5896.69 *9*	3$^+$,4$^+$,5$^+$,6$^+$	4	
5918.10 *13*	2$^+$,(1$^+$)	0+2	
6073.31 *21*	2$^+$,(3$^+$)	2+4	
6088.20? *52*	(1$^-$,2$^-$,3$^-$,4$^-$,5$^-$)	3	
6175.94? *52*	(1$^-$,2$^-$)	1+3	
6183.13? *65*	(1$^-$,2$^-$,3$^-$,4$^-$,5$^-$)	3	
6199.11? *24*	(3$^+$,4$^+$,5$^+$,6$^+$)	4	
6223.5? *6*			E(level): Other: 6223.51 keV *4* in Table II of 2004To03.
6247.67 *13*	2$^-$	1+3	
6256.67 *15*	1$^-$,2$^-$	1+3	
6305.92 *53*	2$^+$,3$^+$,4$^+$	2+4	

† Unresolved doublet.
‡ From 2004To03, as listed in Table IV (column 4).
# From 2004To03, based on vector analyzing power.
@ From 2004To03, based on measured dσ/dΩ (12° to 50°) and DWBA calculations. The fits for levels 1846-, 3217-, and 5192-keV only are presented.