^{18}O(^{4}He,^{4}He′): res 2004Go03,1964Po02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 127, 69(2015)	1-Apr-2015

Others: 2001Ro29, 1968Go08.

2004Go03,2001Ro29: ^{18}O(^{4}He,^{4}He′) in inverse kinematics. ^{18}O beam, E=80 MeV entered a large scattering chamber through 3 μm thick Havar foil. The chamber was filled with helium gas of 99.9% purity. Recoiling α particles were detected by an array of 20 silicon detectors positioned in the forward direction including 0°. A gas pressure of 370 Torr used to stop the ^{18}O beam before the 0° detector. Deduced resonance states, J$^{\pi}$, width, α-cluster doublet levels, etc. Same research group in 2004Go03 and 2001Ro29.

1964Po02: Target ^{18}O prepared by oxidizing tungsten with water vapor enriched to greater than 97% ^{18}O and evaporating the W_4O_{11} onto 25 μg/cm^2 carbon backings; Projectile: α, E=2.40 MeV; Experimental data were taken on two separate occasions: First − scattered α particles were detected at $\theta_{c.m.}$=90.0°, 125.3°, 140.7°, and 152.3° by a scintillation counter and second − at 140.7° and 164.4° with a Si surface barrier detector; Measured E_{res} and deduced excited resonance energy levels, spin and parity, resonance widths.

^{22}Ne Levels

E(level)[†]	J$^{\pi}$[@]	Γ_{tot}[&]	$\Gamma_{\alpha}/\Gamma_{tot}$%	Comments
11700[‡]	2$^+$[‡]	5[‡] keV	10[‡]	
11760[‡]	1$^-$[‡]	11[‡] keV	28[‡]	
11880 *10*	1$^-$	10 keV	56	
12020 *10*	0$^+$	68 keV	66	
12250 *10*	0$^+$	76 keV	100	
12280 *10*	1$^-$	51 keV	10	
12390 *10*	2$^+$	99 keV	6	
12570 *10*	1$^-$	105 keV	35	E(level): Other: 12580 keV *20* (2001Ro29).
12610 *10*	(2$^+$)	124 keV	4	
12700 *10*	3$^-$	15 keV	6	
12800 *10*	2$^+$	50 keV	12	
12820 *10*	1$^-$	170 keV	53	E(level): Other: 12840 keV *20* (2001Ro29).
12890 *10*	3$^-$	39 keV	9	
12990 *10*	0$^+$	80 keV	40	
13030 *10*	2$^+$	90 keV	29	
13190 *10*	3$^-$	79 keV	39	
13210 *10*	0$^+$	81 keV	39	
13400 *10*	3$^-$	58 keV	39	
13490 *10*	4$^+$	29 keV	10	
13540 *10*	0$^+$	96 keV	77	
13570 *10*	3$^-$	136 keV	12	
13650 *10*	(3$^-$)	48 keV	16	
13670 *10*	(2$^+$)	41 keV	12	
13690 *10*	(5$^-$)	50 keV	4	
13730 *10*	4$^+$	57 keV	7	
13820 *10*	(2$^+$)	51 keV	7	
13880 *10*	4$^+$	46 keV	7	
19280[#] *20*	(7$^-$)[#]	88[#a] keV	25[#]	
19560[#] *20*	(7$^-$)[#]	75[#a] keV	23[#]	
20850[#] *20*	9$^-$[#]	110[#a] keV	15[#]	
21840[#] *20*	9$^-$[#]	170[#a] keV	22[#]	

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$^{18}O(^4He,^4He')$: res 2004Go03,1964Po02 (continued)

^{22}Ne Levels (continued)

† From 2004Go03, except otherwise noted.
‡ From 1964Po02.
# From 2001Ro29.
@ From double differential cross section measurements and fitting (2004Go03,2001Ro29).
& From 2004Go03, except otherwise noted. In center-of-mass system. The uncertainty of the widths for the low-spin (broad) states is 20%, and for high-spin (narrow) states up to 70% (2004Go03).
a The precision of the evaluated width is better than 25%, except for states with $J^\pi=7^-$ (2001Ro29).