

$^{44}\text{Ca}(^{16}\text{O},^{16}\text{O}')$  1982Re03

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh and John A. Cameron		NDS 112, 2357 (2011)	31-Jul-2011

**1982Re03:** E=60 MeV  $^{16}\text{O}$  beam produced from the Argonne FN tandem. Enriched  $^{44}\text{Ca}$  target (>98.6%). Outgoing particles momentum analyzed in the Argonne split-pole magnetic spectrograph and detected in a position-sensitive ionization chamber. Energy resolution FWHM<100 keV. Measured  $\sigma(E,\theta)$  for several levels. Deduced levels,  $J^\pi$ , L from DWBA analysis.

Others:

**1972Ei07:** E=25-42 MeV 200nA beam. Enriched targets of 20-30  $\mu\text{g}/\text{cm}^2$  on carbon or gold backing. Particle detectors. Measured  $\sigma(E(^{16}\text{O}),\theta)$  at backward angles. Deduced differences between  $^{16}\text{O}$  and  $^{18}\text{O}$ . Incoming-wave boundary-condition method (IWB).

**1971Be26:** E=20-40 MeV. Enriched targets. Measured  $\sigma(E(^{16}\text{O}),\theta)$ . Deduced relative nuclear sizes.

 $^{44}\text{Ca}$  Levels

E(level)	$J^\pi$	L	$\delta_N^\dagger$	Comments
0 $^\ddagger$	0 $^+$			
1157 $^\ddagger$	2 $^+$	2	0.85	$\delta_N$ : 0.85 fm (DWBA).
1884	0 $^+$		0.80	B(E2)( $\uparrow$ )(from 2 $^+$ ,1157)=0.0053.
2283	4 $^+$	4	0.29	B(E2)( $\uparrow$ )(from 2 $^+$ ,1157)=0.0216.
2656	2 $^+$	2	0.32	$\delta_N$ : 0.30 fm (DWBA). 1.01 fm for transition from 2 $^+$ ,1157 ( <b>1982Re03</b> ). B(E2)( $\uparrow$ )(from 2 $^+$ ,1157)=0.0060.
3044	4 $^+$	4	0.15	$\delta_N$ : 0.37 fm (DWBA). 0.71 fm for transition from 2 $^+$ ,1157 ( <b>1982Re03</b> ). B(E4) $\uparrow$ =0.000034 $\delta_N$ : 0.16 fm (DWBA).
3308 $^\ddagger$	3 $^-$	3	0.60	$\delta_N$ : 0.73 fm (DWBA).
3914	5 $^-$	5	0.33	B(E2)( $\uparrow$ )(from 3 $^-$ ,3308)=0.00132. $\delta_N$ : 0.47 fm (DWBA). 0.30 fm for transition from 3 $^-$ ,3308 ( <b>1982Re03</b> ).
4399	3 $^-$		0.45	B(E3) $\uparrow$ =0.00138 $\delta_N$ : 0.48 fm (DWBA).
4651	2 $^+$		0.41	B(E2) $\uparrow$ =0.0078 $\delta_N$ : 0.47 fm (DWBA).
4905	2 $^+$		0.44	B(E2) $\uparrow$ =0.20 $J^\pi$ : adopted $J^\pi=3^-$ disagrees with 2 $^+$ . $\delta_N$ : 0.52 fm (DWBA).
5006?				

$^\dagger$  Nuclear deformation length (in fm) from coupled-channel analysis for transitions from 0 $^+$  ground state in  $^{44}\text{Ca}$  (**1982Re03**).

$^\ddagger$  The most prominent peaks in the spectrum.