^{44}Ca(^{16}O,^{16}O′) 1982Re03

History

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

1982Re03: E=60 MeV ^{16}O beam was produced from the Argonne FN tandem. Target was enriched ^{44}Ca (>98.6%). Outgoing particles were momentum-analyzed in the Argonne split-pole magnetic spectrograph (FWHM<100 keV) and detected in a position-sensitive ionization chamber. Measured σ(E,θ) for several levels. Deduced levels, J, π, L-transfers, transition strengths from DWBA analysis.

Others:

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

1971Be26: E=20-40 MeV. Enriched targets. Measured σ(E(^{16}O),θ). Deduced relative nuclear sizes.

^{44}Ca Levels

Transition strengths are from 1982Re03.

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

[†] Nuclear deformation length (in fm) from coupled-channel analysis for transitions from 0$^+$ ground state in ^{44}Ca (1982Re03). Values from DWBA are given under comments.

[‡] The most prominent peaks in the spectrum (1982Re03).