^{16}O(^{28}Si,αnγ)   **1999An39**

		History	
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 149, 1 (2018)	1-Jan-2018

1999An39 (also 1999AnZT): E=125 MeV ^{28}Si beam was produced from the 88-inch Cyclotron at the Lawrence Berkeley National Laboratory. Target was ≈0.5 mg/cm^2 thick self-supporting ^{40}CaO foil (99.8% in ^{16}O). γ rays were detected with the GAMMASPHERE array of 83 Ge detectors, charged particles were detected with the 4π detector array MICROBALL, and neutrons were detected with 15 liquid scintillators. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\alpha\gamma$-coin, nγ-coin. Deduced levels, J, π. Comparisons with theoretical calculations.

^{39}Ca Levels

E(level)	J$^{\pi}$[†]
0	3/2$^+$
2797 2	7/2$^-$
3640 2	(9/2$^-$)
3891 2	(11/2$^-$)
5151 2	(11/2$^-$)
5402 2	(13/2$^-$)
6432 2	(15/2$^+$)
6900 2	(15/2$^-$)
7750 2	(19/2$^-$)

[†] From Adopted Levels for g.s. and first two excited levels. Values in parentheses from analogy of level energy and decay branching with mirror partner ^{39}K.

γ(^{39}Ca)

E$_\gamma$[†]	I$_\gamma$[‡]	E$_i$(level)	J$^{\pi}_i$	E$_f$	J$^{\pi}_f$	E$_\gamma$[†]	I$_\gamma$[‡]	E$_i$(level)	J$^{\pi}_i$	E$_f$	J$^{\pi}_f$
252 1	38 4	3891	(11/2$^-$)	3640	(9/2$^-$)	1511 1	28 2	5402	(13/2$^-$)	3891	(11/2$^-$)
843 1	34 5	3640	(9/2$^-$)	2797	7/2$^-$	1749 1	24 2	6900	(15/2$^-$)	5151	(11/2$^-$)
850 1	45 6	7750	(19/2$^-$)	6900	(15/2$^-$)	2797 2	100	2797	7/2$^-$	0	3/2$^+$
1030 1	20 2	6432	(15/2$^+$)	5402	(13/2$^-$)	3008 2	33 3	6900	(15/2$^-$)	3891	(11/2$^-$)
1094 1	74 9	3891	(11/2$^-$)	2797	7/2$^-$	3640 2	12 3	3640	(9/2$^-$)	0	3/2$^+$
1260 1	27 2	5151	(11/2$^-$)	3891	(11/2$^-$)						

[†] Values in 1999AnZT are given with uncertainties but are consistently lower than those (without uncertainties) reported in Figure 3 of 1999An39 for the same measurement. This results in considerable for level energies near the top of the level scheme. By comparisons with other γ-ray studies, the evaluator has taken values from 1999An39 with uncertainties from 1999AnZT.
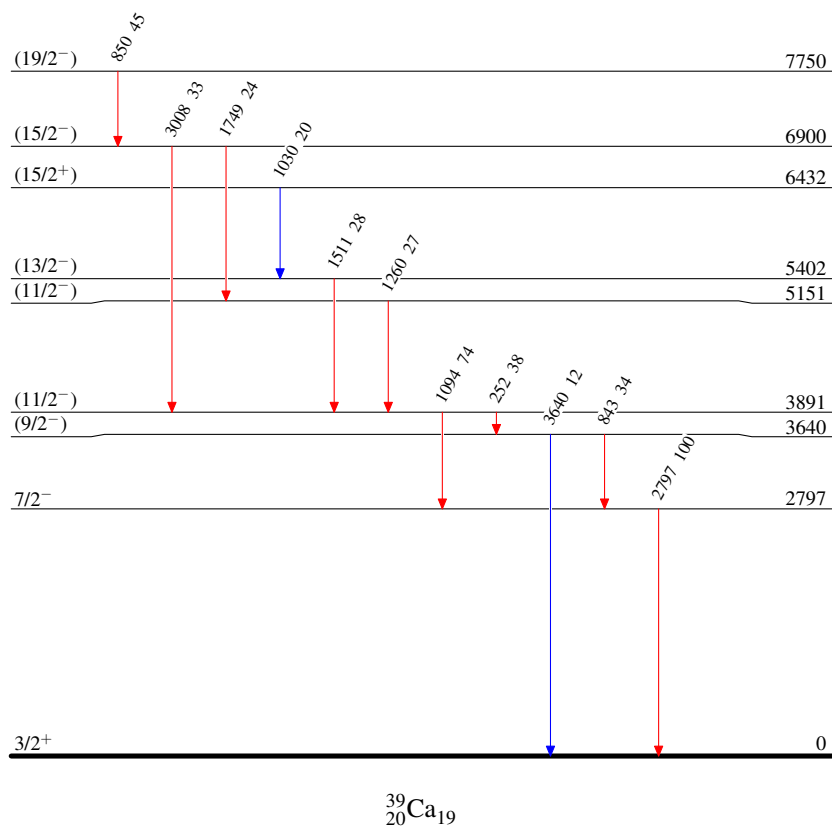
[‡] From 1999AnZT.

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Legend

Level Scheme

Intensities: Relative I$_\gamma$

I$_\gamma$ <　2%×I$_\gamma^{max}$
I$_\gamma$ < 10%×I$_\gamma^{max}$
I$_\gamma$ > 10%×I$_\gamma^{max}$

(19/2$^-$) 　 7750
(15/2$^-$) 　 6900
(15/2$^+$) 　 6432
(13/2$^-$) 　 5402
(11/2$^-$) 　 5151
(11/2$^-$) 　 3891
(9/2$^-$) 　 3640
7/2$^-$ 　 2797
3/2$^+$ 　 0

850 45
3008 33
1749 24
1030 20
1511 28
1260 27
1094 74
252 38
3640 12
843 34
2797 100

$^{39}_{20}$Ca$_{19}$