$^{1}H(^{50}Ca,P'\gamma)$ 2014Ri04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 157, 1 (2019)	15-Apr-2019

2014Ri04: E(^{50}Ca)=90 MeV/nucleon was produced in fragmentation of ^{76}Ge beam at E=130 MeV/nucleon ^{76}Ge beam provided by Coupled-Cyclotron facility at NSCL-MSU impinged on 376-mg/cm^2 production target of ^{9}Be. Secondary products with Z=14-23 from fragmentation of ^{76}Ge beam were separated by A1900 fragment separator, and identified by energy loss and time-of-flight using S800 magnetic spectrograph. Secondary target=liquid hydrogen. Measured Doppler corrected Eγ, Iγ, (^{50}Ca)γ-coin using GRETINA array of 28, 36-fold segmented HPGe crystals. Deduced levels, cross sections, deformation parameters, and M_n/M_p. Comparison with coupled-channel calculations.

^{50}Ca Levels

E(level)[†]	J^π	$T_{1/2}$	Comments
0	0^+		
1028 *2*	2^+	68.6 ps *55*	$T_{1/2}$: from DSA (2014Ri04). σ=3.4 mb *11*. From measured cross sections, deformation length δ_2=0.57 fm *9* (2014Ri04).
3009 *12*	(2^+)		σ=1.4 mb *2*.
3992 *9*	(3^-)		σ=6.8 mb *6*.
4030 *18*	$(1^+,2^+)$		σ=3.5 mb *7*.
4510 *15*	(4^+)		σ=1.6 mb *2*.
5113 *18*	(5^-)		σ=0.4 mb *1*.

[†] From Eγ data.

γ(^{50}Ca)

Eγ	Iγ	E_i(level)	J^π_i	E_f	J^π_f	Comments
603 *11*	2.6 *9*	5113	(5^-)	4510	(4^+)	
1028 *2*	100 *5*	1028	2^+	0	0^+	
1981 *11*	9 *1*	3009	(2^+)	1028	2^+	
2964 *8*	42 *4*	3992	(3^-)	1028	2^+	
3009	9 *3*	4030	$(1^+,2^+)$	1028	2^+	Iγ(3009)/Iγ(4030)=44 *12*/56 *15*; note that this ratio is reversed in table I of 2014Ri04, which is probably a misprint.
3482 *14*	13 *1*	4510	(4^+)	1028	2^+	
4030 *18*	12 *3*	4030	$(1^+,2^+)$	0	0^+	
[x]5082 *29*	5.4 *6*					

[x] γ ray not placed in level scheme.

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Level Scheme

Intensities: Relative I_γ