^{9}Be(^{44}S,^{43}Pγ) 2008Ri04,2006Fr13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen[#]	NDS 126, 1 (2015)	31-Mar-2015

One-proton knockout reaction.

2008Ri04: E=91.7 MeV/nucleon ^{44}S beam was produced by the Coupled Cyclotron facility at NSCL by fragmentation of 140 MeV/nucleon ^{48}Ca beam on a 705 mg/cm^2 ^{9}Be fragmentation target and incident on a ^{9}Be 376 mg/cm^2 reaction target. Fragments were separated by the A1900 fragment separator and S800 magnetic spectrograph. Projectiles were identified by time-of-flight and energy loss in the S800 ion chamber and γ-rays were detected by a 32-fold segmented high-purity germanium detector array (SeGA). Measured Eγ, Iγ, $\gamma\gamma$. Deduced levels, J, π. Comparisons with shell-model calculations.

2007Ba47: E(^{44}S)=39 MeV/nucleon secondary beam produced from primary beam of ^{48}Ca produced at GANIL facility with E=60 MeV/nucleon. Fragments separated using ALPHA spectrometer. Decay residue identified using time-of-flight and energy loss measurements. Measured Eγ, Iγ using an array of 74 BaF_2 crystals arranged in two hemispheres above and below the ^{9}Be target.

2006Fr13 (also 2005Fr19): E(^{44}S)=98.6 MeV/nucleon secondary beam produced from fragmentation of ^{48}Ca beam at 140 MeV/nucleon with a ^{9}Be target. Fragments were separated by A1900 separator at NSCL, Michigan State University (MSU) facility. The ^{44}S beam impinged another ^{9}Be target and the residues were analyzed by S800 spectrograph. The knockout residues were identified by time-of-flight, energy loss measurement, position and angle information. The γ-rays were detected in coin with knockout residues of ^{43}P using SeGA array of highly-segmented HPGe detectors. Shell-model calculations.

All data from 2008Ri04 unless otherwise noted.

^{43}P Levels

E(level)[†]	J$^\pi$[#]	L[‡]	σ (mb)[b]
0	1/2$^+$[@]	0	2.3 *4*
184 *1*	3/2$^+$[&]	2	3.1 *3*
845 *3*	(5/2$^+$)[a]		0.37 *7*
1009 *5*	(5/2$^+$)[a]	2	0.8 *2*
1095 *6*	(5/2$^+$)[a]	2	1.9 *2*
1774 *8*	(5/2$^+$)		0.4 *1*
2035 *11*	(5/2$^+$)[a]		0.7 *2*

[†] From least-squares fit to Eγ data (by evaluators).
[‡] From parallel momentum distributions and comparison with eikonal-model calculations.
[#] From comparisons of experimental data with shell-model calculations.
[@] Configuration=2s$_{1/2}$.
[&] Configuration=1d$_{3/2}$.
[a] Configuration=1d$_{5/2}$.
[b] Partial cross section.

γ(^{43}P)

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$
184 *1*	100	184	3/2$^+$	0	1/2$^+$
661 *4*	8 *1*	845	(5/2$^+$)	184	3/2$^+$
765 *6*	3.9 *6*	1774	(5/2$^+$)	1009	(5/2$^+$)
825 *5*	17 *1*	1009	(5/2$^+$)	184	3/2$^+$
845 *4*	2.7 *7*	845	(5/2$^+$)	0	1/2$^+$
911 *6*	25 *1*	1095	(5/2$^+$)	184	3/2$^+$
1018[†] *6*	5 *1*	2035	(5/2$^+$)	1009	(5/2$^+$)
1851 *11*	7 *1*	2035	(5/2$^+$)	184	3/2$^+$

[†] Placement of transition in the level scheme is uncertain.

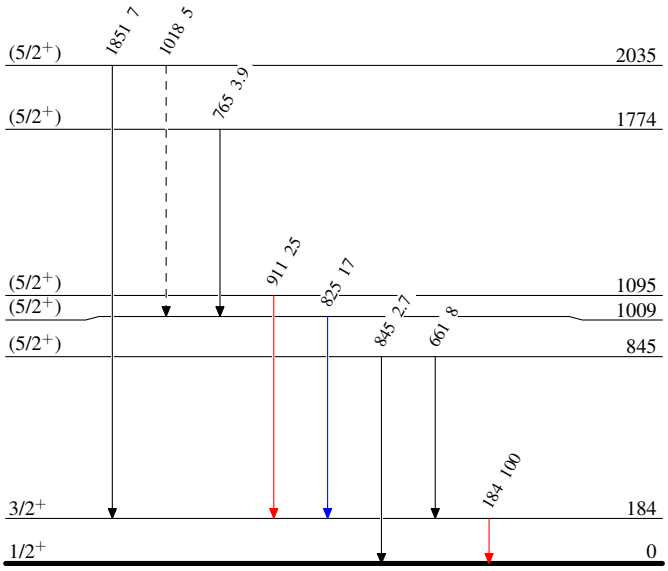
^{9}Be(^{44}S,^{43}Pγ) 2008Ri04,2006Fr13

Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{43}_{15}P_{28}$