

C($^{46}\text{K},\text{pn}\gamma$) 1999Wa21

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

1999Wa21: E=210-280 MeV/nucleon ($v/c\approx 0.6$) radioactive ion beam of ^{46}K produced by $^9\text{Be}(^{50}\text{Ti},\text{X})$ at E=330 MeV/nucleon and selected by the FRagment Separator (FRS) at GSI. Target of 0.54 g/cm² Carbon. A 4π γ -spectrometer, the Darmstadt-Heidelberg Crystal Ball (CB), of 153 individual NaI crystals (7% intrinsic resolution) for detecting γ -rays. Measured E_γ , I_γ , $\gamma\gamma$ -coin. Deduced levels.

^{44}Ar Levels

E(level)	J^π	Comments
0	0^+	
1110 80	2^+	J^π : from the Adopted Levels.
1780? 80		E(level): this level is uncertain since the 1780 80 γ may be the same as the 1817.7 γ from a 2976 level seen in ^{44}Cl β^- decay.
		J^π : (2^+) proposed from shell-model calculations.
2.61×10^3 16		J^π : (4^+) proposed from shell-model calculations. But a similar level fed in ^{44}Cl β^- decay de-excites to 0^+ which rules out 4^+ . See the Adopted Levels, Gammas dataset.

$\gamma(^{44}\text{Ar})$

E_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
1110 80	1110	2^+	0	0^+	E_γ : 1158.1 l in ^{44}Cl β^- decay.
1500 80	2.61×10^3		1110	2^+	E_γ : this γ may be the same as the 1588.1 γ seen in coincidence with 1158 γ in ^{44}Cl β^- decay.
1780 ‡ 80	1780?		0	0^+	E_γ : this γ may be the same as the 1817.7 γ seen in coincidence with 1158 γ in ^{44}Cl β^- decay.

† $\Delta(E_\gamma)=80$ keV assigned by the evaluators, based on level-energy uncertainties quoted by 1999Wa21. The E_γ values quoted here seem systematically lower by ≈ 50 keV when compared to precise E_γ available from ^{44}Cl β^- decay.

‡ Placement of transition in the level scheme is uncertain.

Legend

C($^{46}\text{K},\text{pn}\gamma$) 1999Wa21Level Scheme

-----► γ Decay (Uncertain)
● Coincidence

