

^{82}As β^- decay (19.1 s) 2004Ga44

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	J. K. Tuli, E. Browne		NDS 157, 260 (2019)	1-Mar-2019

Parent: ^{82}As : $E=0.0$; $J^\pi=(2^-)$; $T_{1/2}=19.1$ s 5; $Q(\beta^-)=7489$ 4; $\% \beta^-$ decay=100.0

^{82}As - $T_{1/2}, J^\pi$: From Adopted Levels.

^{82}As - $Q(\beta^-)$: from 2017Wa10.

Based on XUNDL dataset from 2004Ga44 compiled by J. Roediger and B. Singh (McMaster), September 10, 2004.

2004Ga44: Isotopes of ^{82}As were produced via neutron-induced fission of a ^{235}U target. The desired isotope was then ionized by plasma ionization and mass separated before being collected on mylar tape in front of the detector system. Tape movements were used in order to minimize contributions from possible contaminations by long lived nuclides. In a second experiment of the same reaction, γ -ray multi-spectrum scaling was performed where tape movements were followed by seven groups of data taken with the beam deflected. Measured E_γ , I_γ , $\gamma\gamma$, I_β , $\beta\gamma$ (coin) using standard coaxial HPGe detectors, while a Low Energy Photon Ge detector (LEP) was used as a β detector.

Decay scheme is in general agreement with earlier work of 1975Kr08. Tentative levels, at 3705, 4566, have not been confirmed.

Others:

1975Kr08: $^{82}\text{Se}(n,p)$, fission products, chemical separation, ^{82}As activity from ^{82}Ge separation. Ge(Li), Measured E_γ , I_γ , $\gamma\gamma$.

1972De43: $^{235}\text{U}(n,f)$, measured E_γ , I_γ , $\gamma(t)$. Determined $T_{1/2}(^{82}\text{As})=22.6$ s 14 from $656\gamma(t)$.

1970Va31: $^{82}\text{Se}(n,p), \text{Ge}(\text{Li})$ FWHM=3.5 keV at 1.33 MeV, Si(Li), NaI(Tl), and plastic scin. Measured E_β , I_β , E_γ , I_γ , $\beta\gamma$, $\gamma\gamma$ coin. Both ^{82}As isotopes were produced and some of the transition assignments could not be resolved.

 ^{82}Se Levels

E(level) [†]	J^π
0.0	0^+
654.34 16	2^+
1408.96 23	0^+
1730.08 16	2^+
1733.7 3	4^+
2623.8 4	(0^+)
3007.7 3	3^-
3667.5 3	$(1,2^+)$
4243.60 23	(1^-)

[†] From least-squares fit to E_γ 's.

 β^- radiations

E(decay)	E(level)	$I\beta^-$ [†]	Log ft	Comments
(3245 4)	4243.60	15 5	5.35 15	av $E\beta=1392.6$ 20 E(decay): 3269 38 from $\beta(2513.3\gamma)$; 3295 26 from $\beta(2835.0\gamma)$.
(3822 4)	3667.5	4.6 16	6.17 16	av $E\beta=1668.7$ 20
(4481 4)	3007.7	3.7 13	6.57 16	av $E\beta=1986.7$ 20
(4865 4)	2623.8	5.6 19	8.34 ^{1u} 15	av $E\beta=2171.1$ 20
(5755 4)	1733.7	8 3	8.65 ^{1u} 17	av $E\beta=2600.7$ 20
(5759 4)	1730.08	16 6	6.43 17	av $E\beta=2604.8$ 20
(6080 4)	1408.96	1.5 9	9.5 ^{1u} 3	av $E\beta=2757.9$ 20 E(decay): 6137 163 from $\beta(754.8\gamma)$.
(6835 4)	654.34	21 8	6.65 17	av $E\beta=3126.3$ 20
(7489 [‡] 4)	0.0	25 25	8.9 ^{1u} 5	av $E\beta=3441.6$ 20

[†] Absolute intensity per 100 decays.

[‡] Existence of this branch is questionable.

^{82}As β^- decay (19.1 s) 2004Ga44 (continued) $\gamma(^{82}\text{Se})$

I γ normalization: From 2004Ga44 based on %I γ (754.8) determined from simultaneous measurement of β and γ in fission product yield distribution by 2000Ga38.

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π
654.4 2	100 5	654.34	2 ⁺	0.0	0 ⁺
754.8 2	17.6 9	1408.96	0 ⁺	654.34	2 ⁺
1075.6 2	10.9 16	1730.08	2 ⁺	654.34	2 ⁺
1079.3 2	15 2	1733.7	4 ⁺	654.34	2 ⁺
1730.0 2	31 5	1730.08	2 ⁺	0.0	0 ⁺
1969.4 3	10.4 7	2623.8	(0 ⁺)	654.34	2 ⁺
2353.3 2	6.9 5	3007.7	3 ⁻	654.34	2 ⁺
2513.3 2	12.9 8	4243.60	(1 ⁻)	1730.08	2 ⁺
2835.0 3	14.9 9	4243.60	(1 ⁻)	1408.96	0 ⁺
3667.4 3	8.5 6	3667.5	(1,2 ⁺)	0.0	0 ⁺

[†] For absolute intensity per 100 decays, multiply by 0.54 18.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

