Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 135, 193 (2016)	31-May-2016

Q(β^-)=2281 *5*; S(n)=8890 *11*; S(p)=9063 *6*; Q(α)=−7596 *6* 2012Wa38
S(2n)=15862 *6*, S(2p)=22222 *6* (2012Wa38).
1951Bu25: production and identification of ^{79}As in ^{80}Se(γ,X),E=80 MeV, measured half-life.
Additional information 1.
Nuclear structure calculations: 2015Ku12, 2013Ve10, 2008Yo07 calculated levels, J, π.

^{79}As Levels

Cross Reference (XREF) Flags

A ^{79}Ge β^- decay (18.98 s)
B ^{79}Ge β^- decay (39.0 s)
C ^{79}As IT decay (1.21 μs)
D ^{76}Ge(α,p)
E ^{80}Se(d,^{3}He)
F ^{80}Se(t,α)

E(level)†	J$^\pi$‡	T$_{1/2}$	XREF	Comments
0.0	3/2$^-$	9.01 min *15*	ABCDEF	%β^-=100 J$^\pi$: log *ft*=5.27 to 1/2$^-$ and 6.85 to 5/2$^-$; L(d,^{3}He)=L(t,α)=L(α,p)=1. Probable p$_{3/2}$ orbital. T$_{1/2}$: from 1953Cu33. Others: 8.2 min *2* (1970OsZZ), 9 min *2* (1961Yt01), 1954Yt03, 9 min (1951Bu25).
100.45 *5*	(1/2$^-$)		A	J$^\pi$: dipole γ to 3/2$^-$ and systematics. Probable p$_{1/2}$ orbital.
109.58 *4*	(3/2)$^-$		AB DEF	J$^\pi$: M1+E2 γ to 3/2$^-$; L(d,^{3}He)=1 and probable contribution from p$_{3/2}$ orbital. E(level): in (t,α), 105 *7* level (L=1) most likely involves p$_{3/2}$ orbital.
230.57 *4*	(5/2)$^-$		ABCDEF	XREF: E(232.7). J$^\pi$: L(d,^{3}He)=L(t,α)=L(α,p)=3 and probable contribution from f$_{5/2}$ orbital.
499 *2*	(1/2)$^-$		DEF	J$^\pi$: L(d,^{3}He)=L(α,p)=1 and probable contribution from p$_{1/2}$ orbital; $\sigma(\theta)$ shape in (α,p).
603.69 *4*	(1/2,3/2)		A DE	J$^\pi$: γ to (1/2$^-$); log *ft*=6.23 from (1/2$^-$).
634.06 *4*	(5/2,7/2)		AB DE	J$^\pi$: γ to 3/2$^-$; log *ft*=6.16 from (7/2$^+$).
772.81 *6*	(9/2)$^+$	1.21 μs *1*	BCDEF	%IT=100 XREF: E(779)F(779). J$^\pi$: L(d,^{3}He)=L(t,α)=L(α,p)=4 and probable contribution from g$_{9/2}$ orbital. T$_{1/2}$: from γ(t); weighted average of 1.21 μs *1* (1988Gr14) and 1.18 μs *4* (2013RuZX). Other: 0.87 μs *6* (1998Ho15) is in disagreement.
875.16 *4*	(≤7/2)		B D	J$^\pi$: γ to 3/2$^-$.
1012.03 *8*	(5/2$^+$)		B	J$^\pi$: log *ft*=5.86 *6* from (7/2$^+$); γ to (3/2)$^-$.
1016 *5*	(3/2)$^-$		DEF	J$^\pi$: L(t,α)=1 and probable contribution from p$_{3/2}$ orbital. E(level): this level is most likely different from 1012 since opposite parities are predicted by log *ft* value and L-transfer. Although from energy values levels in (α,p) and (d,^{3}He) could be 1012 and/or 1016, but it is assumed that a common level is populated in the three reactions.
1048 *4*	(1/2)$^-$		DEF	J$^\pi$: L(d,^{3}He)=1, L(α,p)=(1); $\sigma(\theta)$ shape in (α,p).
1143 *3*	(5/2)$^-$		DEF	J$^\pi$: L(t,α)=3 and probable contribution from f$_{5/2}$ orbital.
1411.98 *6*			A D	
1434 *4*			DEF	J$^\pi$: L(t,α)=(3,0) suggests 5/2$^-$ or 1/2$^+$.
1490.23 *8*			AB	
1496.89 *10*	(5/2$^+$,7/2$^+$,9/2$^+$)		B	J$^\pi$: log *ft*=5.8 *1* from (7/2$^+$).
1505.96 *5*	(3/2)$^-$		A EF	XREF: F(1501).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{79}As Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF	Comments
			J$^{\pi}$: L(d,^{3}He)=L(t,α)=1 and probable contribution from $p_{3/2}$ orbital.
1517.89? *8*		B	
1710 *6*		D F	J$^{\pi}$: L(t,α)=(1,3) suggests $3/2^-$ or $5/2^-$.
1811 *5*	$(9/2)^+$	D F	J$^{\pi}$: L(t,α)=L(α,p)=4 and probable contribution from $g_{9/2}$ orbital.
1869.42 *6*	$(1/2^-,3/2^-)$	A D	J$^{\pi}$: log *ft*=5.9 *1* from $(1/2^-)$.
1890.36 *5*	$(5/2^+,7/2^+,9/2^+)$	B	J$^{\pi}$: log *ft*=4.8 *1* from $(7/2^+)$.
1895 *4*	$(1/2)^-$	DEF	J$^{\pi}$: L(d,^{3}He)=L(t,α)=L(α,p)=1 and probable contribution from $p_{1/2}$ orbital; $\sigma(\theta)$ shape in (α,p).
1942 *8*		D	
1964.84 *9*	$(9/2)^+$	B D F	J$^{\pi}$: L(t,α)=L(α,p)=4 and probable contribution from $g_{9/2}$ orbital.
2056 *4*	$(3/2)^-$	EF	J$^{\pi}$: L(t,α)=1 and probable contribution from $p_{3/2}$ orbital.
2128 *10*	$(1/2^+)$	F	J$^{\pi}$: L(t,α)=(0).
2219 *7*		F	J$^{\pi}$: L(t,α)=(1,3) suggests $3/2^-$ or $5/2^-$.
2329 *13*		F	J$^{\pi}$: L(t,α)=(3,0) suggests $5/2^-$ or $1/2^+$.
2553 *3*	$1/2^+$	F	J$^{\pi}$: L(t,α)=0.
2636 *13*	$1/2^+$	F	J$^{\pi}$: L(t,α)=0.
2835 *9*		F	J$^{\pi}$: L(t,α)=(3,0) suggests $5/2^-$ or $1/2^+$.
2945 *13*	$(5/2^-)$	F	J$^{\pi}$: L(t,α)=(3) and possible $f_{5/2}$ orbital.
3071 *10*	$(5/2)^-$	F	J$^{\pi}$: L(t,α)=3 and probable contribution from $f_{5/2}$ orbital.
3166 *10*		F	J$^{\pi}$: L(t,α)=(4,0) suggests $9/2^+$ or $1/2^+$.
3332 *8*		F	
3479 *10*		F	

[†] From least-squares fit to Eγ values in ^{79}Ge β^- decay. For others, weighted averages have been taken.

[‡] Following shell-model orbitals are considered, unless otherwise stated, when J$^{\pi}$ is deduced from L(t,α): $s_{1/2}$ for L=^{0,}$P_{3/2}$ for L=^{1,}$F_{5/2}$ for L=3 and $g_{9/2}$ for L=4.

Adopted Levels, Gammas (continued)

γ(^{79}As)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	δ[†]	α[‡]	Comments
100.45	(1/2$^-$)	100.48 *6*	100	0.0	3/2$^-$	(M1)		0.0888	Mult.: α(K)exp data allows E1 or M1 but systematics suggest Δπ=+ between g.s. and 100 level.
109.58	(3/2)$^-$	109.58 *6*	100	0.0	3/2$^-$	M1+E2	0.37 *8*	0.129 *24*	
230.57	(5/2)$^-$	230.62 *5*	100	0.0	3/2$^-$	[M1,E2]		0.023 *13*	
603.69	(1/2,3/2)	503.26 *6*	100	100.45	(1/2$^-$)				
		603.70 *6*	51 *4*	0.0	3/2$^-$				
634.06	(5/2,7/2)	524.45 *6*	32 *3*	109.58	(3/2)$^-$				
		634.00 *6*	100	0.0	3/2$^-$				
772.81	(9/2)$^+$	542.27 *7*	100	230.57	(5/2)$^-$	[M2]		0.0040	B(M2)(W.u.)=0.0258 *2*
875.16	(≤7/2)	644.61 *8*	67 *9*	230.57	(5/2)$^-$				
		765.46 *6*	100 *5*	109.58	(3/2)$^-$				
		875.19 *6*	66 *4*	0.0	3/2$^-$				
1012.03	(5/2$^+$)	781.51 *8*	100 *7*	230.57	(5/2)$^-$				
		902.32 *12*	31 *3*	109.58	(3/2)$^-$				
1411.98		808.22 *8*	37 *3*	603.69	(1/2,3/2)				
		1181.44 *6*	100	230.57	(5/2)$^-$				
1490.23		1259.65 *7*	100	230.57	(5/2)$^-$				
1496.89	(5/2$^+$,7/2$^+$,9/2$^+$)	484.86 *6*	100	1012.03	(5/2$^+$)				
1505.96	(3/2)$^-$	871.78 *6*	3.8 *3*	634.06	(5/2,7/2)				
		1275.26 *10*	4.5 *3*	230.57	(5/2)$^-$				
		1396.53 *6*	23 *1*	109.58	(3/2)$^-$				
		1505.85 *50*	100 *5*	0.0	3/2$^-$				
1517.89?		745.03[#] *6*	100	772.81	(9/2)$^+$				
1869.42	(1/2$^-$,3/2$^-$)	1265.80 *6*	39 *3*	603.69	(1/2,3/2)				
		1869.25 *8*	100	0.0	3/2$^-$				
1890.36	(5/2$^+$,7/2$^+$,9/2$^+$)	1015.14 *6*	99 *5*	875.16	(≤7/2)				
		1117.56 *6*	100 *5*	772.81	(9/2)$^+$				
		1256.32 *6*	100 *6*	634.06	(5/2,7/2)				
1964.84	(9/2)$^+$	446.90[#] *6*	100	1517.89?					
		1192.09[#] *8*	85 *7*	772.81	(9/2)$^+$				

[†] From ce data in ^{79}Ge β$^-$.

[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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

From ENSDF

$^{79}_{33}As_{46}$-3

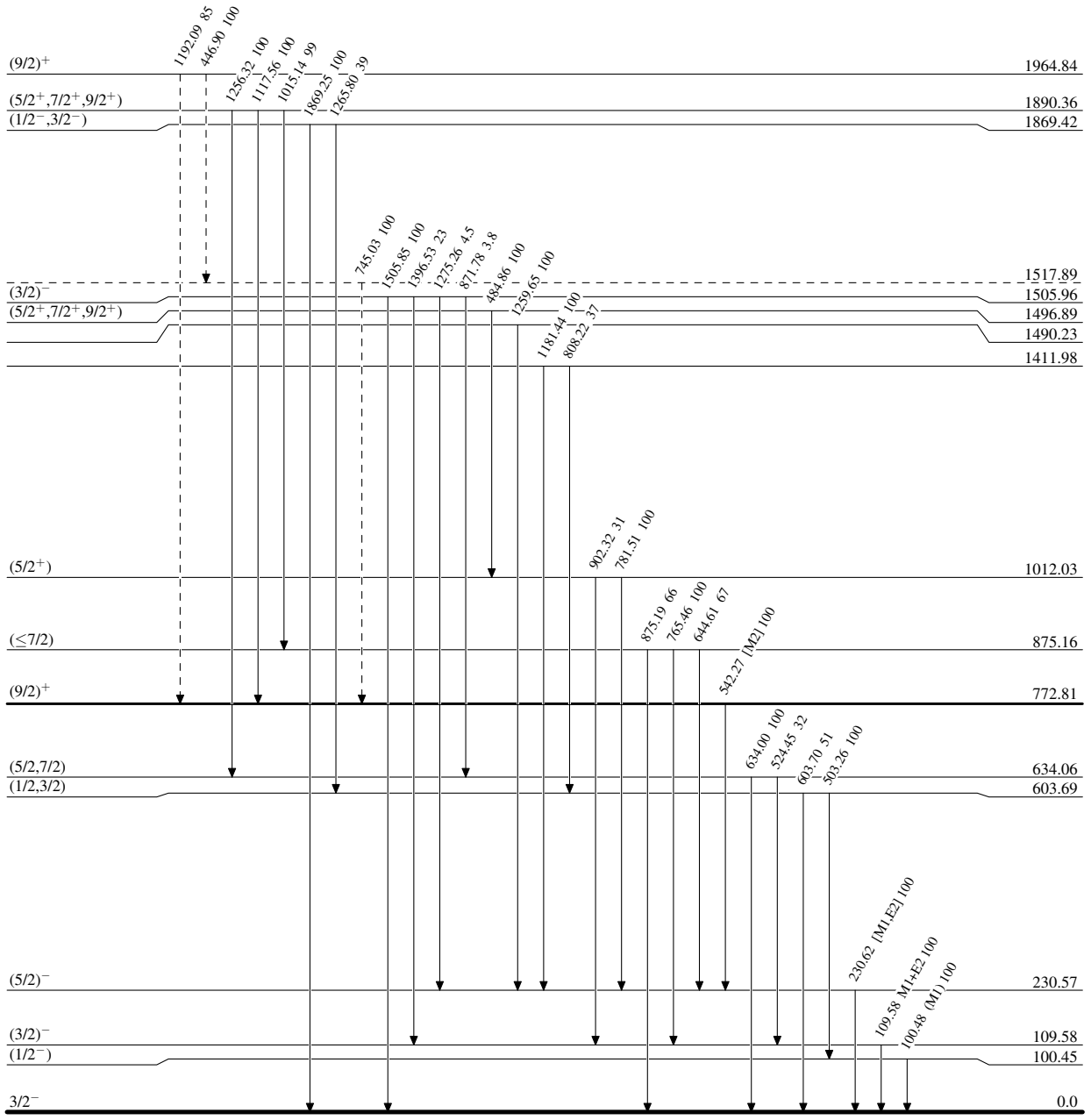
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{79}_{33}As_{46}$