Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, John Cameron and Balraj Singh	NDS 112,2715 (2011)	20-Oct-2011

Q(β^-)=3988.4 19; S(n)=8380.4 21; S(p)=12190 15; Q(α)=$-$12328 21 2012Wa38

Note: Current evaluation has used the following Q record \$ 3988.4   19 8380 2 12190 14-12329 20 2011AuZZ.

S(2n)=14663.1 22, S(2p)=30910 70 (2003Au03,2011AuZZ).

Values in 2003Au03: Q(β^-)=3988.6 19, S(n)=8371 5; others are the same as in 2011AuZZ.

First isotope identification by 1971Ar32 using ^{232}Th(^{40}Ar,X) reaction.

1971Gr53: ^{35}P activity produced with the ^{37}Cl(γ,2p) reaction, measured Eγ, T$_{1/2}$ (45 s 2).

1972Ap01: ^{35}P β^- decay, ^{35}P activity produced by bombardment LiCl and NaCl with 16 MeV tritons at the Los Alamos tandem van de Graaff, measured T$_{1/2}$ (47.4 s 8), masses.

1972Go31: ^{35}P activity produced with the ^{18}O(^{19}F,2p) and ^{36}S(t,α) reactions from the second tandem of the Brookhaven National Laboratory (BNL) tandem van de Graaff facility, measured Eγ, $\beta\gamma$-coin, T$_{1/2}$ (48.1 s 14), deduced logft.

1997Vo03: ^{56}Fe(p,X), at E=800 MeV, with the 800 proton beam of the WNR(Weapons Neutron Research) facility of the Los Alamos National Laboratory, measured γ production cross section, discrete γ lines.

1999Ai02: Products from ^{55}Mn fragmentation on Si target at the National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University, measured cross section, deduced absorption radius.

2007No13: ^{9}Be(^{40}Ar,X) and ^{181}Ta(^{40}Ar,X) at E-100 MeV/nucleon at the RIKEN Accelerator Research Facility, measured momentum distribution and production cross sections.

2007Ho08: E=215 MeV ^{36}S^9 beam produced from the combined XTU- Tandem and ALPI accelerator at the INFN legnaro National Laboratory, with a intensity of 60 enA on a 300 μg/cm^2 Pb target with a 20 μg/cm^2 carbon backing. A magnetic spectrometer (PRISMA) for the detection of the reaction products; measured yield of ^{35}P.

Mass measurements: 1988Or01, 1985Dr06, 1985Kh04, 1984Ma49.

Structure calculations (binding energies, dipole moments, quadrupole moments, radii, levels, J^π, etc.): 2009No01, 2004Kh16, 2003Sm02.

Additional information 1.

^{35}P Levels

Cross Reference (XREF) Flags

A	^{35}Si β^- decay (0.78 s)	E	^{37}Cl(^{11}B,^{13}N)
B	^{36}Si β^-n decay (0.45 s)	F	^{160}Gd(^{37}Cl,Xγ)
C	^{34}S(^{18}O,^{17}F)	G	^{208}Pb(^{36}S,Xγ)
D	^{36}S(d,^{3}He),(pol d,^{3}He)		

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	XREF	Comments
0	1/2$^+$	47.3 s 8	A CDEFG	%β^-=100
				J$^\pi$: L(pol d,^{3}He)=0.
				T$_{1/2}$: weighted average from 45 s 2 (1971Gr53), 47.4 s 8 (1972Ap01), and 48.1 s 14 (1972Go31).
2386.6 5	3/2$^+$		A CDE G	J$^\pi$: L(pol d,^{3}He)=2 and L-1/2 from analyzing powers.
3859.9 5	5/2$^+$		A DEF	J$^\pi$: L(pol d,^{3}He)=2 and L+1/2 from analyzing powers.
4101.5 5	(7/2$^-$)		A FG	J$^\pi$: 1/2,3/2,5/2,7/2$^-$ from γ's to 1/2$^+$ and 5/2$^+$; shell-model calculations (1987Wa10) suggest 7/2$^-$.
4250 10			E	
4381.8 7			A G	
4493.6 6	(7/2$^-$)		A D FG	J$^\pi$: 1/2$^+$ to 9/2$^+$ from γ to 5/2$^+$; shell-model calculations (1987Wa10) suggest 7/2$^-$.
4664 3	5/2$^+$		DE	J$^\pi$: L(pol d,^{3}He)=2 and L+1/2 from analyzing powers.
4765.9 9			G	
4869.3 6			A G	
4959.3 8			G	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{35}P Levels (continued)

E(level)[†]	J^{π}[‡]	XREF	Comments
5022 _20_		C E	
5087.5 _9_		G	
5198 _10_	$5/2^+$	DE	J^{π}: L(pol d,^{3}He)=2 and L+1/2 from analyzing powers.
5487.5 _9_		G	
5560.7 _8_		A G	
5859 _50_		C E	
6220.5 _9_		G	
6440 _60_		C	
7050 _60_		C	
7440 _60_		C	
7520 _30_		D	
7590 _20_		E	
7920 _60_		C	
8390 _40_		E	
8.60×10^3 _10_		C	
9290 _50_		C	

[†] From Eγ data when measured γ-ray energies are available. In other cases weighted averages are taken of values available from different reactions.
[‡] From vector analyzing powers in (pol d,^{3}He).
[#] From β-decay measurements.

$\gamma(^{35}$P)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[‡]	E_f	J^{π}_f	Mult.
2386.6	$3/2^+$	2386.3 _6_	100	0	$1/2^+$	
3859.9	$5/2^+$	1473.3 _5_	15 _2_	2386.6	$3/2^+$	
		3860.2 _10_	100	0	$1/2^+$	
4101.5	$(7/2^-)$	241.4 _3_	100[#]	3859.9	$5/2^+$	
		1714.8 _6_	7[#] _2_	2386.6	$3/2^+$	[M2]
		4101.4 _10_	54[#] _8_	0	$1/2^+$	[E3]
4381.8		1994.9[&] _6_	100	2386.6	$3/2^+$	
4493.6	$(7/2^-)$	392.2 _4_	100[#] _5_	4101.5	$(7/2^-)$	
		633.7 _5_	17[#] _3_	3859.9	$5/2^+$	
4765.9		273 _1_	26[#] _5_	4493.6	$(7/2^-)$	
		663 _1_	100[#]	4101.5	$(7/2^-)$	
4869.3		374 _1_	60[#] _20_	4493.6	$(7/2^-)$	
		487 _1_	60[#] _20_	4381.8		
		767.9 _4_	100[#]	4101.5	$(7/2^-)$	
		1009.7 _5_	<20[#]	3859.9	$5/2^+$	
4959.3		466[@] _1_	100[#]	4493.6	$(7/2^-)$	
		856 _1_	93[#]	4101.5	$(7/2^-)$	
5087.5		128 _1_	52[#] _8_	4959.3		
		321 _1_	100[#]	4765.9		
5487.5		993 _1_	100	4493.6	$(7/2^-)$	
		1387 _1_	60 _20_	4101.5	$(7/2^-)$	
5560.7		1459.4 _7_	34 _12_	4101.5	$(7/2^-)$	
		3173.5 _10_	100 _17_	2386.6	$3/2^+$	
6220.5		1132 _1_	<25	5087.5		

Adopted Levels, Gammas (continued)

$\gamma(^{35}P)$ (continued)

E_i(level)	E_γ†	I_γ‡	E_f	J^π_f
6220.5	1260 1	100 20	4959.3	
	1729 1	200 20	4493.6	$(7/2^-)$

† Values with ΔE are primarily from β^- decay and ^{208}Pb(^{36}S,Xγ). Weighted average is taken when values are available from both. Others are deduced from level-energy differences.
‡ From β^- decay and ^{208}Pb(^{36}S,Xγ). Weighted average is taken when values are available from both, unless otherwise noted.
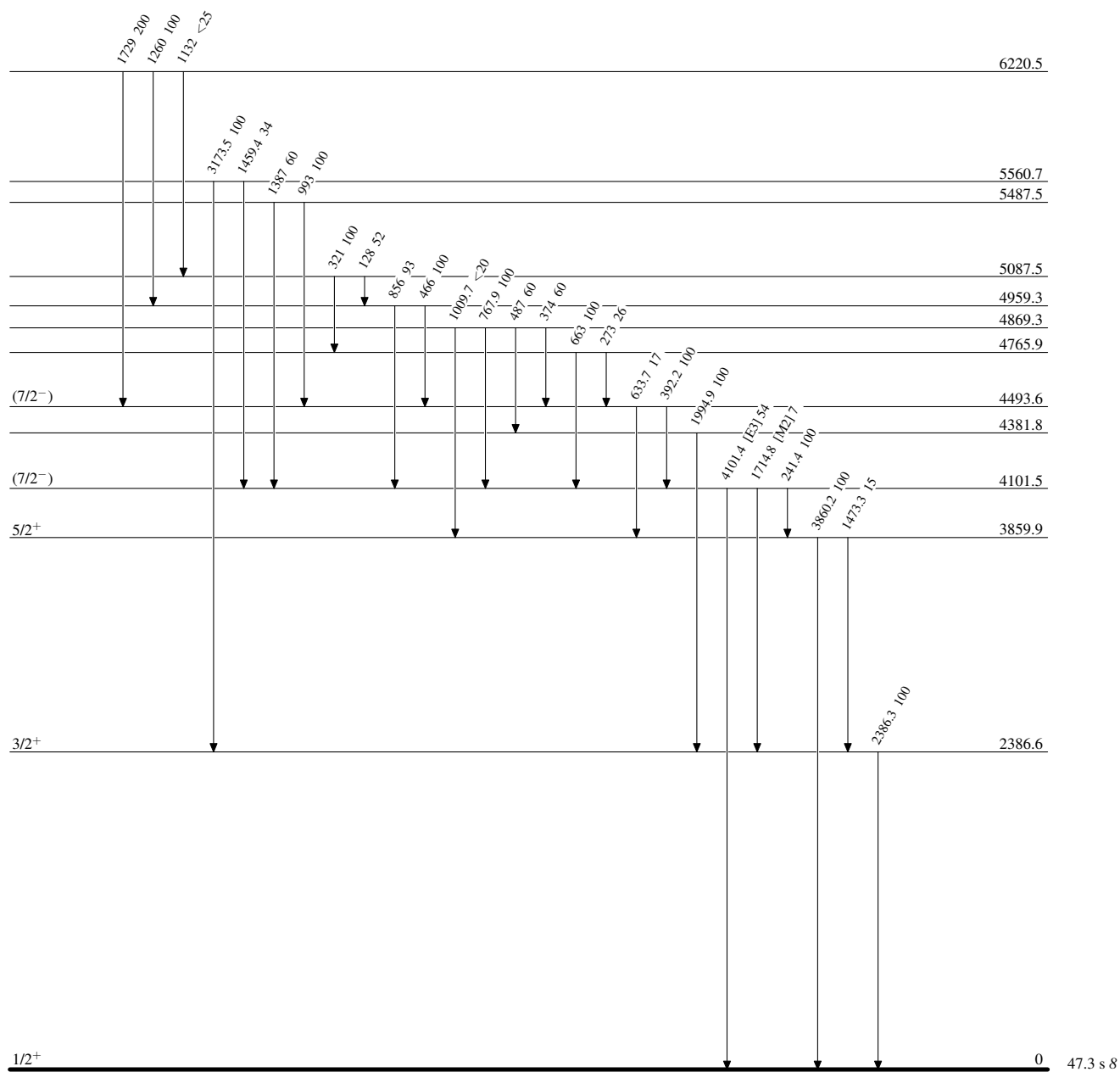# From ^{208}Pb(^{36}S,Xγ).
@ Other: 468.9 4 in β decay.
& Note that this γ was also placed from a 6095 to 4101 level in 1988DuZT, but in another report (1988DuZS) by the same authors, this γ was placed from 4381 to 2386 level.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level