Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 112,1393 (2011)	31-Mar-2011

Q(β^-)=5823.0 *13*; S(n)=4508.0 *8*; S(p)=16705 *13*; Q(α)=−12336 *12* 2012Wa38
Note: Current evaluation has used the following Q record 5845 16 *4483* 16 *16720* 87 −12315 *19* 2009AuZZ.
Q(β^-),S(n),S(p): from 2003Au03 and 2009AuZZ.
Q(α): −12299 *21* from 2003Au03.
Q(β^-n)=−4259 *16* (2003Au03, 2009AuZZ).
Identification: 1971Ar32: ^{232}Th(^{40}Ar,X) E=290 MeV, measured fragment isotopic yield.
Later studies of production and decay studies of ^{33}Si: 1972Go32, 1972Go09, 1973Go33, 1991Zh24, 1991Or01, 1995ReZZ, 2002Mo29.
2006Kh08: Cross section measurement in Si(^{33}Si,X) E=30-65 MeV/nucleon, deduced 'reduced strong absorption radius= 1.0200 fm^2 *15*. The ^{33}Si beam obtained from fragmentation of ^{48}Ca beam with ^{181}Ta target at GANIL facility.
1999Ai02: Cross section measurement in Si(^{33}Si,X) E=38-80 MeV/ nucleon at NSCL facility. Deduced strong absorption radius.
Mass measurement: 2009Kw02 (mass excess=−20514.30 *70*).
Additional information 1.

^{33}Si Levels

Cross Reference (XREF) Flags

A	^{33}Al β^- decay (41.7 ms)	F	^{160}Gd(^{34}S,X),(^{36}S,X)
B	^{34}Al β^-n decay (56.3 ms)	G	^{197}Au(^{33}Si,^{33}Si′γ)
C	^{9}Be(^{34}Si,^{33}Siγ)	H	^{198}Pt(^{37}Cl,Xγ)
D	^{34}S(^{13}C,^{14}O),^{36}S(^{14}C,^{17}O)	I	^{208}Pb(^{36}S,Xγ)
E	^{36}S(^{11}B,^{14}N)		

E(level)†	J$^\pi$‡	T$_{1/2}$	XREF	Comments
0	3/2$^+$	6.11 s *21*	ABCDEFGHI	%β^-=100 μ=1.21 *3* (1992Sh31,1992Ma52,2005St24) μ: from g factor=0.803 *21* (preliminary value from NMR of nuclei polarized by optical pumping with β-asymmetry detection) (1992Sh31, (1992Sh31,1992Ma52; also 1992MaZS,1992Sh23,1992ShZL). J$^\pi$: log *ft*=4.96) to 1/2$^+$ and log *ft*=5.45 to 5/2$^+$; L(^{9}Be(^{34}Si,^{33}Si))=2. T$_{1/2}$: from γ-multiscaling (1973Go33). Other: 6.3 s 3 (1972Go09, same group as 1973Go33). Additional information 2.
1010.2 *5*	1/2$^+$		ABCDEFG I	XREF: B(?). J$^\pi$: L(^{9}Be(^{34}Si,^{33}Si))=0.
1434.9 *5*	7/2$^-$	10.2 ns *3*	B D F HI	XREF: D(1470). J$^\pi$: M2 γ to 3/2$^+$. T$_{1/2}$: from (fragment)γ(t) in ^{198}Pt(^{37}Cl,Xγ) (2002AsZY).
1981.0 *15*	(3/2$^-$)		D I	
3159 *3*	(9/2$^-$)		D I	
4090 *3*	(11/2$^-$)		D I	
4341 *11*	3/2$^+$,5/2$^+$		A C E G	J$^\pi$: L(^{34}Si,^{33}Si))=2 is equivalent to L(p,d)=2.
4931? *4*	(11/2$^-$)		I	
5480			D	

† From Adopted Gammas when measured γ-ray energies are available.
‡ From shell-model predictions and systematics, unless otherwise noted.

Adopted Levels, Gammas (continued)

$\gamma(^{33}Si)$

E_i(level)	J^π_i	E_γ†	I_γ	E_f	J^π_f	Mult.	Comments
1010.2	$1/2^+$	1010.2 *5*	100	0	$3/2^+$		
1434.9	$7/2^-$	1434.9 *5*	100	0	$3/2^+$	M2	B(M2)(W.u.)=0.0486 *15* Mult.: from analysis of in-plane to out-of-plane γ asymmetry in $^{198}Pt(^{37}Cl,X\gamma)$ (2002AsZY).
1981.0	$(3/2^-)$	971 *1*	100	1010.2	$1/2^+$		
3159	$(9/2^-)$	1724 *2*	100	1434.9	$7/2^-$		
4090	$(11/2^-)$	2655 *2*	100	1434.9	$7/2^-$		
4341	$3/2^+,5/2^+$	4341 *11*	100	0	$3/2^+$		
4931?	$(11/2^-)$	1772‡ *2*	100	3159	$(9/2^-)$		

† Values with ΔE from β-decay and $^{208}Pb(^{36}S,X\gamma)$.
‡ Placement of transition in the level scheme is uncertain.

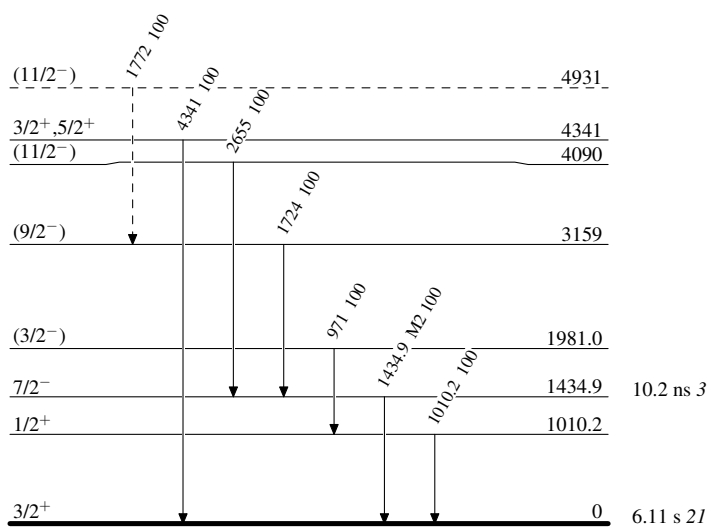
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{33}_{14}Si_{19}$