^{48}Ca(^{13}C,4nγ) E=25-65 MeV 1978Na06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. R. Bhat	NDS 85, 415 (1998)	24-Sep-1998

Measured γ's; Ge(Li). DSAM and RDM.

^{57}Fe Levels

E(level)†	J$^\pi$‡	$T_{1/2}$#	Comments
0.0	$1/2^-$		
14.413@	$3/2^-$		
136.474@	$5/2^-$		
366.761@	$3/2^-$	11& ps *2*	
706.38 *6*	$5/2^-$		
1007.05 *9*	$7/2^-$		J$^\pi$: $7/2^-$.
1197.91 *15*	$9/2^-$	2.9& ps *4*	J$^\pi$: $(9/2)^-$.
1356.87 *16*	$7/2^-$		
1989.57 *22*	$9/2^-$		J$^\pi$: $9/2^{(-)}$.
2356.09 *15*	$(11/2)^-$	<0.14 ps	J$^\pi$: $(11/2)^-$.
2455.65 *18*	$9/2^+$		
2878.5 *3*	$(13/2)^-$	<0.14 ps	J$^\pi$: $(13/2)^-$.
3134.5 *3*	$(15/2)^-$	160& ps *7*	J$^\pi$: (15/2).
3269.42[a] *18*	$(13/2)^+$		$T_{1/2}$>1.0 ps<3.5 ps $T_{1/2}$: lower limit from DSAM; upper limit from RDM. J$^\pi$: $(13/2^+)$ from stretched-quadrupole radiation pattern.
3513.6 *3*	(17/2)	<0.14 ps	J$^\pi$: (17/2).
4432.4 *6*		<0.14 ps	
4525.7[a] *3*	$(17/2^+)$	0.38 ps *14*	J$^\pi$: $(17/2^+)$ from stretched-quadrupole radiation pattern.
6187.3[a] *4*	$(21/2^+)$	<0.14 ps	J$^\pi$: $(21/2^+)$ from stretched-quadrupole radiation pattern.
8323.2[a] *5*	$(25/2^+)$	<0.14 ps	J$^\pi$: $(25/2^+)$ from stretched-quadrupole radiation pattern.

† Calculated using least-squares adjustment procedures. Energies of the first three excited states were held fixed in the calculation.
‡ From Adopted Levels; supporting arguments from this data set based on $T_{1/2}$ and $\gamma(\theta)$ and (α,nγ) data of 1972Sa38 are indicated.
# From DSAM, except as noted.
@ From Adopted Levels.
& From RDM.
[a] Band(A): ΔJ=2 positive-parity band. See 1978Na06 for comparison to ^{56}Fe ground-state band.

$\gamma(^{57}Fe)$

$\gamma\gamma$-coincidences were measured but not given.

E_i(level)	J_i^π	E_γ	I_γ†	E_f	J_f^π	E_i(level)	J_i^π	E_γ	I_γ†	E_f	J_f^π
14.413	$3/2^-$	(14.413‡)	(100)‡	0.0	$1/2^-$	706.38	$5/2^-$	691.97 *15*		14.413	$3/2^-$
136.474	$5/2^-$	121.97 *3*		14.413	$3/2^-$			705.5# *50*		0.0	$1/2^-$
		(136.474‡)		0.0	$1/2^-$	1007.05	$7/2^-$	640.20 *14*	3 *2*	366.761	$3/2^-$
366.761	$3/2^-$	230.27 *14*	16 *3*	136.474	$5/2^-$			870.62# *16*	64# *1*	136.474	$5/2^-$
		352.21 *10*	77 *2*	14.413	$3/2^-$			992.63 *16*	33 *1*	14.413	$3/2^-$
		366.65 *12*	7 *3*	0.0	$1/2^-$	1197.91	$9/2^-$	1061.60 *17*	100	136.474	$5/2^-$
706.38	$5/2^-$	339.60‡@		366.761	$3/2^-$	1356.87	$7/2^-$	650.49 *15*	100	706.38	$5/2^-$

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^{48}Ca(^{13}C,4nγ) E=25-65 MeV 1978Na06 (continued)

$\gamma(^{57}Fe)$ (continued)

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π
1989.57	$9/2^-$	982.97 *32*		1007.05	$7/2^-$
		1282.85 *27*		706.38	$5/2^-$
2356.09	$(11/2)^-$	1158.37 *18*	48[&] *4*	1197.91	$9/2^-$
		1348.86 *19*	52[&] *4*	1007.05	$7/2^-$
2455.65	$9/2^+$	1448.52 *20*	100	1007.05	$7/2^-$
2878.5	$(13/2)^-$	1680.58 *21*		1197.91	$9/2^-$
3134.5	$(15/2)^-$	256.03 *11*	100	2878.5	$(13/2)^-$
3269.42	$(13/2)^+$	813.73 *15*	33 *2*	2455.65	$9/2^+$
		913.37 *16*	67 *2*	2356.09	$(11/2)^-$
3513.6	(17/2)	379.06 *13*	100	3134.5	$(15/2)^-$
4432.4		1297.8 *5*	100	3134.5	$(15/2)^-$
4525.7	$(17/2^+)$	1256.27 *19*	100	3269.42	$(13/2)^+$
6187.3	$(21/2^+)$	1661.54 *20*		4525.7	$(17/2^+)$
8323.2	$(25/2^+)$	2135.90[#] *29*		6187.3	$(21/2^+)$

[†] Photon branching ratio (in percent) from each level. See 1978Na06 for relative Iγ.
[‡] From adopted gammas.
[#] Includes contribution from unknown contaminant; observed clearly in $\gamma\gamma$-coincidences only.
[@] Observed in $\gamma\gamma$-coincidences only.
[&] Disagrees with results from (α,pnγ) and (α,nγ).
[x] γ ray not placed in level scheme.

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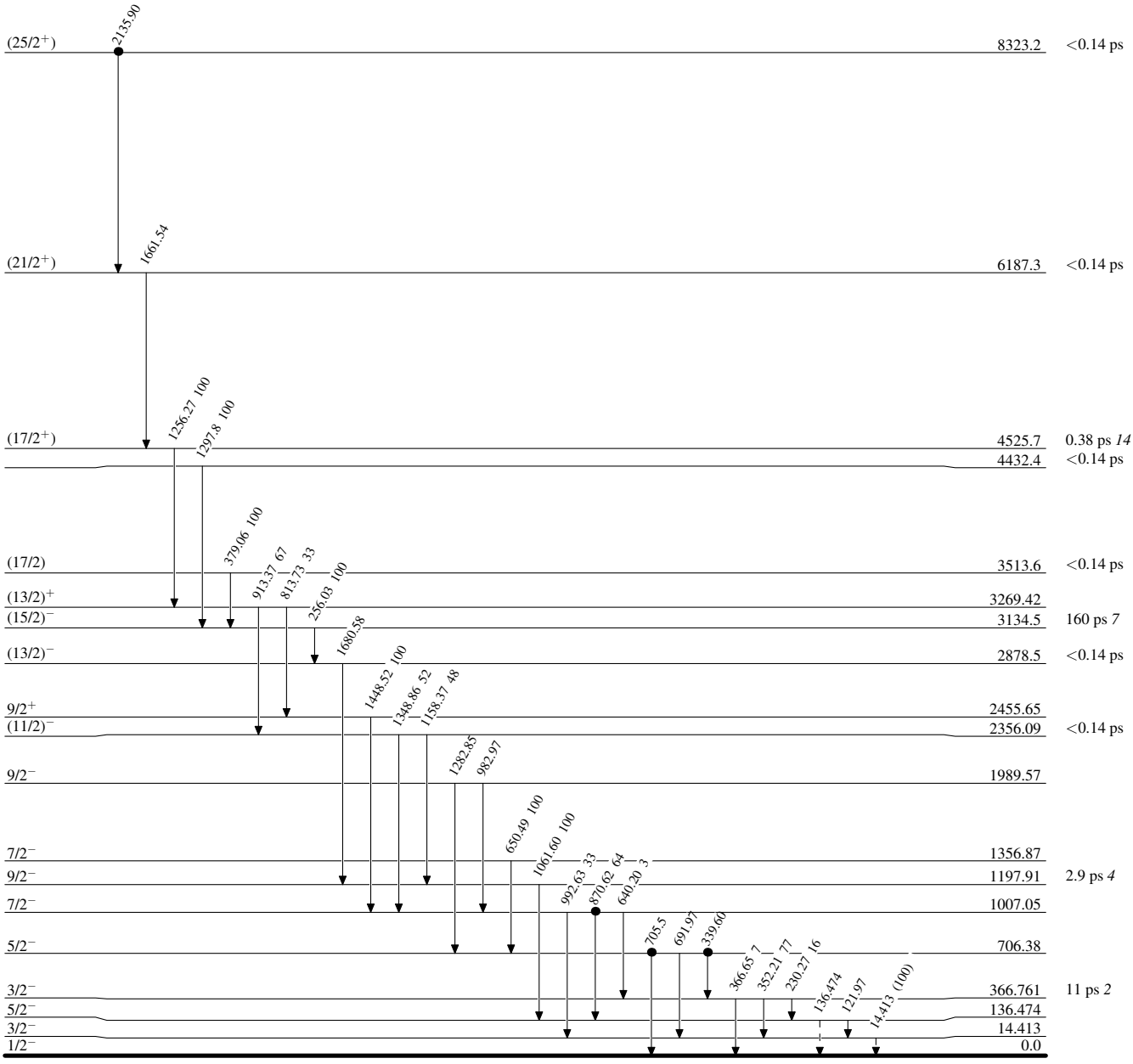
Legend

Level Scheme

Intensities: % photon branching from each level

γ Decay (Uncertain)

Coincidence



$^{57}_{26}Fe_{31}$

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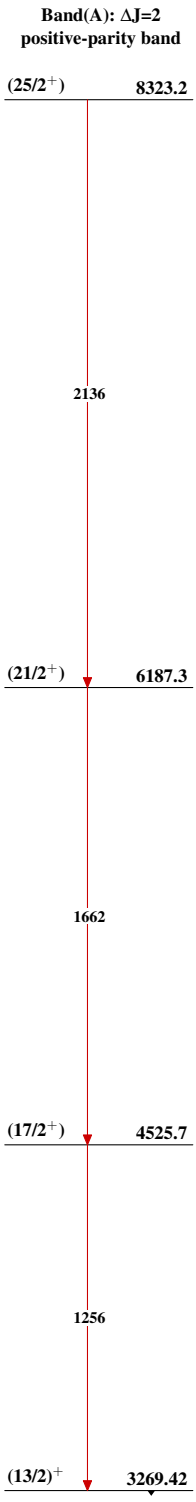

$^{57}_{26}Fe_{31}$