^{9}Be(^{48}Ca,Xγ) 2009Zh23

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde	NDS 128, 185 (2015)	10-Jul-2015

^{48}Ca beam produced at E=172 MeV, Reaction products were separated using the Fragment Mass Analyzer. γ's were detected using the Gammasphere array, consisting of 101 Compton-suppressed HPGe detectors. A parallel-grid avalanche counter was used to determine the positions and timing signals of recoils. Particles were identified by analyzing energy loss in the ionization chamber. Measured Eγ, Iγ, $\gamma\gamma$, (fragment)γ coin, $\gamma(\theta)$ and lifetimes by DSAM.

^{52}Ti Levels

E(level)[†]	J$^{\pi}$[#]	T$_{1/2}$[‡]	Comments
0.0	0^+		
1050.2 *1*	2^+		
2264.7 *1*	2^+	39 fs *6*	
2318.4 *1*	4^+		
2432.5 *1*	2^+	119 fs *8*	
3029.3 *2*	6^+		
3143.2 *1*	4^+	96 fs *19*	
3350.8 *1*	4^+		
3453.7 *1*	3^-	41 fs *6*	
3589.5 *1*	2^+		
3881.7 *10*	0^+		E(level): uncertainty of 0.1 in table I of 2009Zh23 seems a misprint.
3923.7 *1*	2^+		
4023.5 *1*	(4^+)		
4054.7 *8*	5^+		
4102.4 *7*	6^+		
4287.9 *2*	8^+		
4479.4 *2*	3^-		
4535.6 *7*	7^+	85 fs *15*	
4646.8 *2*	4^+		
4787.8 *2*	2^+		
4831.3 *6*	5^-		
4840 *1*	5^+	60 fs *18*	
4907 *1*	(6^+)	37 fs *13*	
5104 *1*	5^-		
5142 *6*	6^+		
5237 *1*	5^+		
5319.4 *2*			
5819 *1*	(8^+)		
6099 *2*	$6^{(+)}$	60 fs *18*	
6693.6 *2*	10^+		
7520 *3*	10^+	41 fs *18*	
8858.0 *2*			
9089.2 *2*			

[†] From least-squares fit to Eγ's.
[‡] From DSAM.
[#] Basd on L(t,p) value and on the measured angular ratios.

^{9}Be(^{48}Ca,Xγ) 2009Zh23 (continued)

$\gamma(^{52}Ti)$

R(ang dist)=(combined Iγ at 79°,81°,90°,99°,101°)/(combined Iγ at 32°,37°,143°,148°,163°). Expected ratio is >1 for ΔJ=2, quadrupole or ΔJ=0, dipole and <1 for ΔJ=1, D or D+Q transitions.

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
231.4 *1*	0.06 *3*	9089.2		8858.0			
247 *1*	0.6 *1*	4535.6	7^+	4287.9	8^+		
482 *1*	0.05 *1*	4535.6	7^+	4054.7	5^+		
672.6 *1*	0.6 *1*	4023.5	(4^+)	3350.8	4^+		
701 *1*	1.2 *3*	5237	5^+	4535.6	7^+	Q	R(ang dist)=1.2 *1*.
710.6 *1*	1.2 *2*	3143.2	4^+	2432.5	2^+		
710.9 *1*	46 *2*	3029.3	6^+	2318.4	4^+	Q	R(ang dist)=1.26 *1*.
752 *1*	1.2 *2*	4102.4	6^+	3350.8	4^+		
824.9 *1*	2.9 *2*	3143.2	4^+	2318.4	4^+	Q	R(ang dist)=1.7 *1*.
880.4 *2*		4023.5	(4^+)	3143.2	4^+		
1025.7 *1*	4.5 *3*	4479.4	3^-	3453.7	3^-	Q	R(ang dist)=1.42 *8*.
1026 *1*	0.8 *2*	4054.7	5^+	3029.3	6^+		
1032.3 *1*	11 *2*	3350.8	4^+	2318.4	4^+	Q	R(ang dist)=1.8 *2*.
1050.2 *1*	100 *5*	1050.2	2^+	0.0	0^+	Q	R(ang dist)=1.20 *1*.
1073 *1*	1.9 *2*	4102.4	6^+	3029.3	6^+	Q	R(ang dist)=1.2 *1*.
1128.6 *1*	0.8 *2*	4479.4	3^-	3350.8	4^+		
1135.4 *1*	7.0 *3*	3453.7	3^-	2318.4	4^+	D	R(ang dist)=0.75 *8*.
1157.1 *1*	0.20 *3*	3589.5	2^+	2432.5	2^+		
1214.4 *1*	5.6 *3*	2264.7	2^+	1050.2	2^+	Q	R(ang dist)=1.33 *4*.
1258.6 *1*	11.8 *6*	4287.9	8^+	3029.3	6^+	Q	R(ang dist)=1.32 *5*.
1268.2 *1*	75 *4*	2318.4	4^+	1050.2	2^+	Q	R(ang dist)=1.29 *1*.
1283 *1*	1.4 *3*	5819	(8^+)	4535.6	7^+	D	R(ang dist)=0.7 *2*.
1324.7 *1*	0.6 *1*	3589.5	2^+	2264.7	2^+	Q	R(ang dist)=1.4 *2*.
1334.1 *1*		4787.8	2^+	3453.7	3^-		
1376 *1*	0.30 *6*	4831.3	5^-	3453.7	3^-		
1382.3 *1*	5.4 *3*	2432.5	2^+	1050.2	2^+	Q	R(ang dist)=1.21 *6*.
1481 *1*	0.6 *2*	4831.3	5^-	3350.8	4^+	D	R(ang dist)=0.7 *2*.
1491.2 *1*	0.42 *7*	3923.7	2^+	2432.5	2^+		
1506 *1*	6.0 *3*	4535.6	7^+	3029.3	6^+	D	R(ang dist)=0.85 *4*.
1590.5 *3*		4023.5	(4^+)	2432.5	2^+		
1617 *1*	0.9 *1*	3881.7	0^+	2264.7	2^+	Q	R(ang dist)=1.1 *2*.
1617 *1*	0.53 *6*	4646.8	4^+	3029.3	6^+	Q	R(ang dist)=1.5 *2*.
1644.5 *3*		4787.8	2^+	3143.2	4^+		
1650 *1*	0.52 *8*	5104	5^-	3453.7	3^-	Q	R(ang dist)=1.7 *4*.
1659.0 *1*		3923.7	2^+	2264.7	2^+		
1697 *1*	0.33 *6*	4840	5^+	3143.2	4^+	D	R(ang dist)=0.74 *9*.
1705.2 *1*		4023.5	(4^+)	2318.4	4^+		
1738 *2*	1.4 *2*	4054.7	5^+	2318.4	4^+	Q	R(ang dist)=0.80 *8*.
1758.8 *1*	0.28 *5*	4023.5	(4^+)	2264.7	2^+	Q	R(ang dist)=1.2 *1*.
1783 *2*	1.5 *2*	4102.4	6^+	2318.4	4^+		
1803 *1*	0.97 *9*	4831.3	5^-	3029.3	6^+	D	R(ang dist)=0.8 *1*.
1865.8 *2*		5319.4		3453.7	3^-		
1878 *1*	2.9 *2*	4907	(6^+)	3029.3	6^+	Q	R(ang dist)=1.4 *1*.
1968.5 *2*		5319.4		3350.8	4^+		
2044 *2*	1.3 *2*	6099	$6^{(+)}$	4054.7	5^+	D	R(ang dist)=0.8 *1*.
2093.0 *1*	1.2 *2*	3143.2	4^+	1050.2	2^+	Q	R(ang dist)=1.4 *1*.
2164.6 *1*	0.43 *8*	8858.0		6693.6	10^+		
2328.3 *3*		4646.8	4^+	2318.4	4^+		
2382.1 *3*		4646.8	4^+	2264.7	2^+		
2395.3 *1*	0.11 *5*	9089.2		6693.6	10^+		
2405.6 *1*	1.8 *2*	6693.6	10^+	4287.9	8^+	Q	R(ang dist)=1.2 *1*.

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^{9}Be(^{48}Ca,Xγ) 2009Zh23 (continued)

$\gamma(^{52}Ti)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
2469.2 *1*		4787.8	2^+	2318.4	4^+		
2520 *3*	0.08 *2*	4840	5^+	2318.4	4^+		
2524.1 *5*		4787.8	2^+	2264.7	2^+		
2824 *6*	0.4 *1*	5142	6^+	2318.4	4^+	Q	R(ang dist)=1.30 *18*.
2831 *3*	0.6 *1*	3881.7	0^+	1050.2	2^+		
3001.1 *3*		5319.4		2318.4	4^+		
3054.0 *5*		5319.4		2264.7	2^+		
3232 *3*	0.9 *1*	7520	10^+	4287.9	8^+	Q	R(ang dist)=1.3 *1*.

[†] From R(ang dist).

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Level Scheme

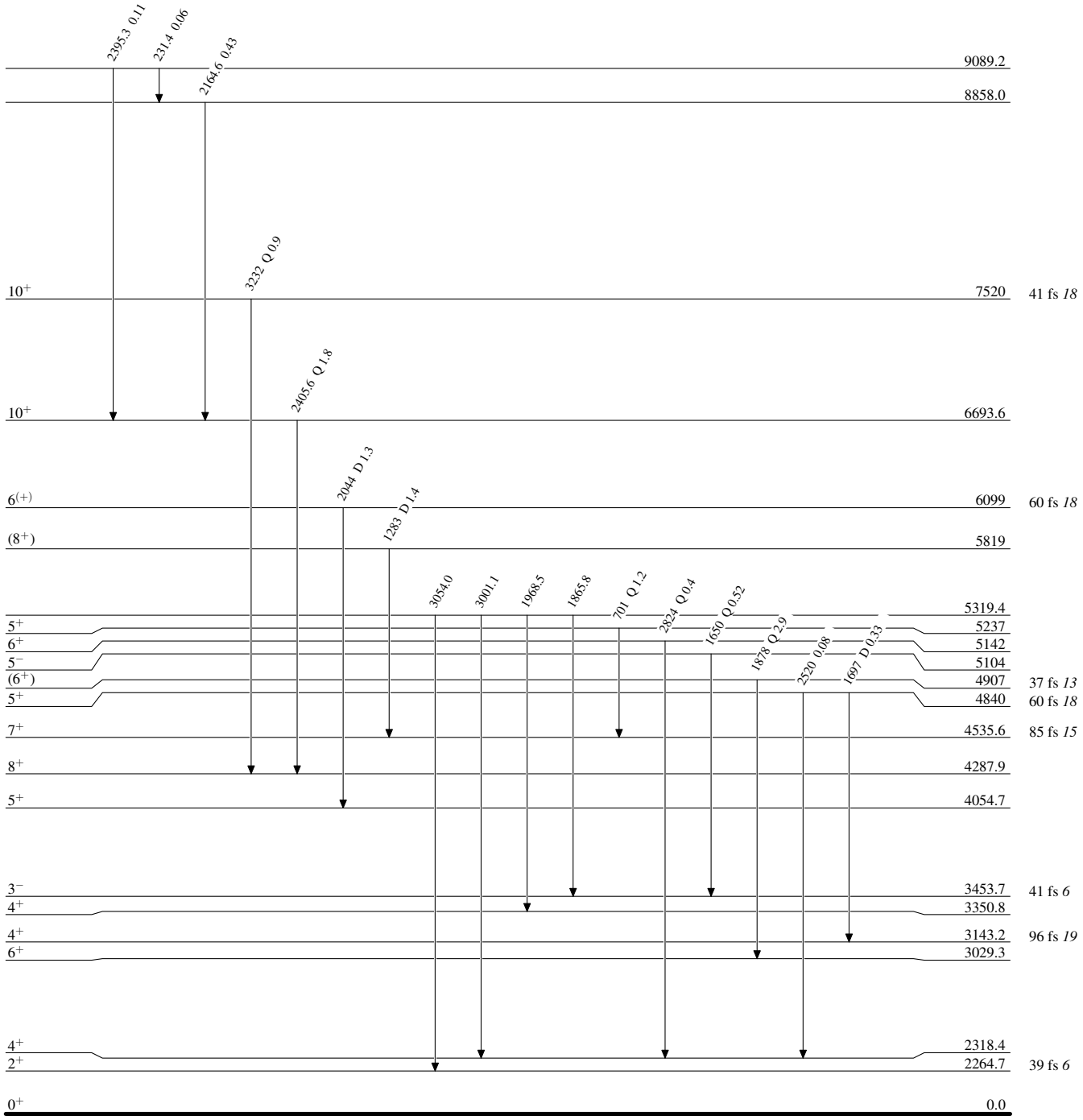
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

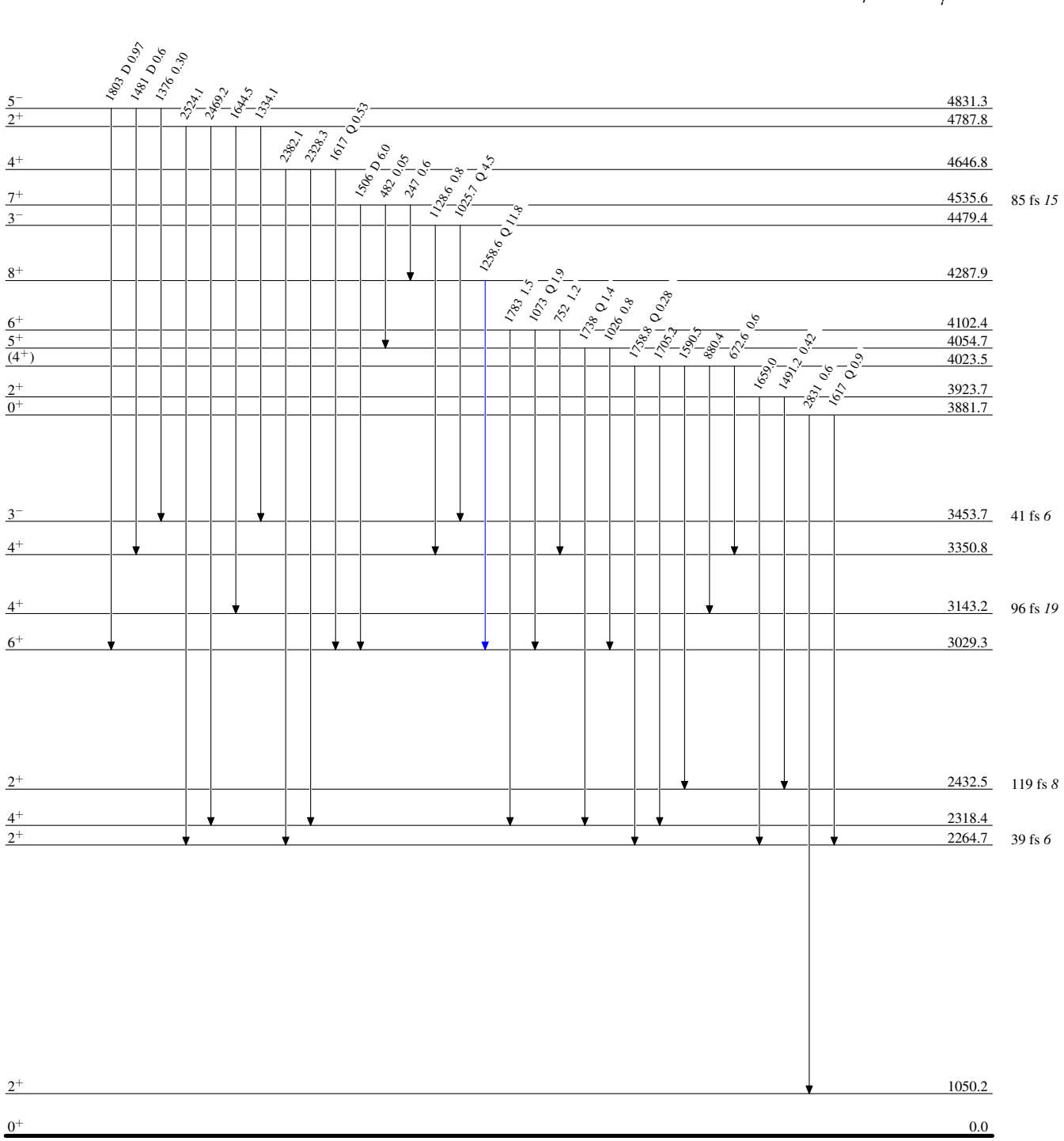


$^{52}_{22}Ti_{30}$

^{9}Be(^{48}Ca,Xγ) 2009Zh23

Level Scheme (continued)

Intensities: Relative I_γ

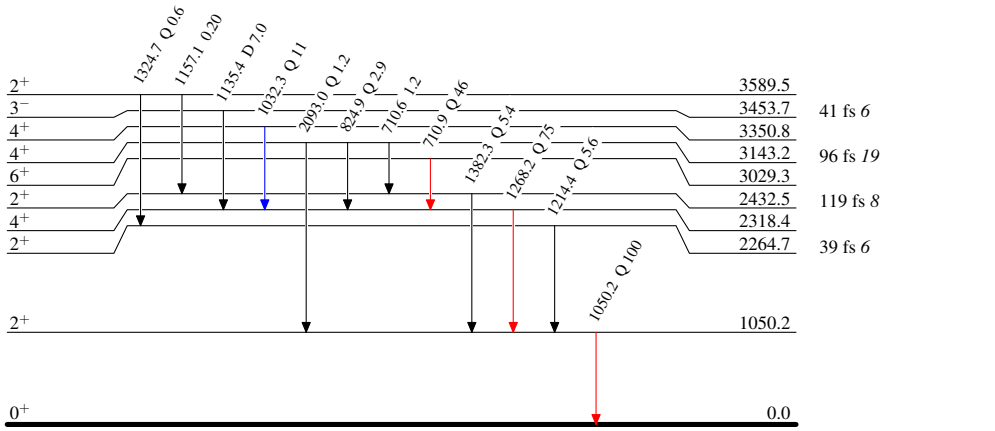


$^{52}_{22}Ti_{30}$

^{9}Be(^{48}Ca,Xγ) 2009Zh23

Level Scheme (continued)

Intensities: Relative I_γ



$^{52}_{22}Ti_{30}$