^{24}Mg(^{28}Si,2$\alpha\gamma$) 2000Ol06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 190,1 (2023)	20-Jun-2023

2000Ol06(also 1998OlZZ, 1999OlZZ): ^{24}Mg(^{28}Si,2$\alpha\gamma$) E=87 MeV. Measured γ, $\gamma\gamma$, $\gamma\gamma(\theta)$(DCO) using four EUROBALL cluster Ge detectors and particle detector array of 31 silicon detectors.

Note that there are significant differences in the upper part of level scheme between 2000Ol06 and 1998UrZY (see companion dataset for ^{44}Ti) with regard to level energies and J^π assignments. With the exception of yrast band and low-spin negative parity states, other J^π assignments in 2000Ol06 are not considered (by the evaluators) as well established, although, given without parentheses by 2000Ol06. In particular, mult=M3 implied for 2906 γ (from 13362, 15^- to 10457, 12^-) is very unlikely in the presence of 1815 transition implied as E2.

^{44}Ti Levels

E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]
0[#a]	0^+	3643[d]	4^-	7397[c]	9^-	11085	12^+
1082[#a]	2^+	4014[#]	6^+	7458	8^+	11496	12^+
1904[&b]	0^+[&]	4059[c]	5^-	7671[#]	10^+	11537[c]	13^-
2453[#a]	4^+	4499[a]	6^+	8039[#]	12^+	11835[a]	12^+
2531[&b]	2^+[&]	5148[d]	6^-	8854[d]	10^-	13362[@c]	15^-
2886[&]	2^+[&]	5661[c]	7^-	8984[a]	10^+	13782[@d]	14^-
3174[c]	3^-	6509[#]	8^+	9503	10^+		
3365[b]	(4^+)	6571[a]	8^+	9711[c]	11^-		
3415[&]	$(2^+,3)$[&]	6919[d]	8^-	10454[d]	12^-		

[†] From 2000Ol06, unless otherwise noted.
[‡] From 1998OlZZ based on $\gamma\gamma(\theta)$(DCO), unless otherwise noted. When considered in the Adopted Levels, assignments are considered tentative, where strong arguments are lacking.
[#] Yrast levels.
[@] From 1999OlZZ.
[&] From the Adopted Levels. Energy is rounded value.
[a] Band(A): g.s. band.
[b] Band(B): 0^+ band.
[c] Band(C): 3^- band.
[d] Band(D): 4^- band.

γ(^{44}Ti)

Asymmetry and DCO ratios under comments are from 1998OlZZ.

E$_\gamma$[†]	I$_\gamma$[#]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
230	1	3643	4^-	3415	$(2^+,3)$	E$_\gamma$: from 1998OlZZ. Eγ not given in 1999OlZZ and 2000Ol06.
368	19	8039	12^+	7671	10^+	Iγ(25°)/Iγ(75°)=1.24 *1*.
416	2	4059	5^-	3643	4^-	Iγ(25°)/Iγ(75°)=0.89 *10*.
468	17	3643	4^-	3174	3^-	Iγ(25°)/Iγ(75°)=0.87 *3*.
513		5661	7^-	5148	6^-	
884	17	4059	5^-	3174	3^-	Iγ(25°)/Iγ(75°)=1.12 *2*.
1082	113	1082	2^+	0	0^+	Iγ(25°)/Iγ(75°)=1.11 *4*.
1089	1	5148	6^-	4059	5^-	
1100		7671	10^+	6571	8^+	
1162	19	7671	10^+	6509	8^+	Iγ(25°)/Iγ(75°)=1.01 *2*.

Continued on next page (footnotes at end of table)

^{24}Mg(^{28}Si,2$\alpha\gamma$) 2000Ol06 (continued)

$\gamma(^{44}Ti)$ (continued)

E_γ [†]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1371	87	2453	4^+	1082	2^+	Iγ(25°)/Iγ(75°)=1.14 *2*.
1506	10	5148	6^-	3643	4^-	Iγ(25°)/Iγ(75°)=1.85 *4*.
1561	33	4014	6^+	2453	4^+	Iγ(25°)/Iγ(75°)=1.16 *4*.
1600	5	10454	12^-	8854	10^-	
1602	15	5661	7^-	4059	5^-	
1606	25	4059	5^-	2453	4^+	
1736	13	7397	9^-	5661	7^-	Iγ(25°)/Iγ(75°)=1.38 *3*.
1771	11	6919	8^-	5148	6^-	Iγ(25°)/Iγ(75°)=1.33 *3*.
1815[‡]	1	13362	15^-	11537	13^-	R(DCO)=1.3 *3*.
1827	2	11537	13^-	9711	11^-	
1935	7	8854	10^-	6919	8^-	Iγ(25°)/Iγ(75°)=1.66 *5*.
2010	2	6509	8^+	4499	6^+	R(DCO)=1.7 *5*.
2046	20	4499	6^+	2453	4^+	R(DCO)=1.78 *10*.
2054		9711	11^-	7671	10^+	E_γ: from figure 5.14, not listed in table 5.11 (1998OlZZ).
2072	7	6571	8^+	4499	6^+	
2092	26	3174	3^-	1082	2^+	Iγ(25°)/Iγ(75°)=0.79 *3*.
2314	4	9711	11^-	7397	9^-	
2413	1	8984	10^+	6571	8^+	Iγ(25°)/Iγ(75°)=1.63 *16*.
2495	19	6509	8^+	4014	6^+	Iγ(25°)/Iγ(75°)=1.14 *2*.
2513	1	11496	12^+	8984	10^+	R(DCO)=1.74 *19*.
2852	1	11835	12^+	8984	10^+	Iγ(25°)/Iγ(75°)=1.25 *17*.
2906[‡@]	1	13362	15^-	10454	12^-	Mult=M3 implied by ΔJ^π makes this transition unlikely in view of competing 1815 (implied mult=E2) transition (evaluators). Iγ(25°)/Iγ(75°)=1.69 *21*.
2932	1	9503	10^+	6571	8^+	R(DCO)=1.15 *29*.
3046	1	11085	12^+	8039	12^+	Iγ(25°)/Iγ(75°)=0.68 *8*.
3325[‡]	1	13782	14^-	10454	12^-	R(DCO)=1.5 *6*.
3444	1	7458	8^+	4014	6^+	Iγ(25°)/Iγ(75°)=1.33 *10*.
3514[‡]	1	11537	13^-	8039	12^+	Iγ(25°)/Iγ(75°)=0.83 *6*.

[†] From 2000Ol06, unless otherwise noted. Uncertainties are from 0.7 to 1.2 keV (1998OlZZ).
[‡] From 1999OlZZ.
[#] From 1999OlZZ. Uncertainties are from 0.5 to 13.
[@] Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: Relative I_γ

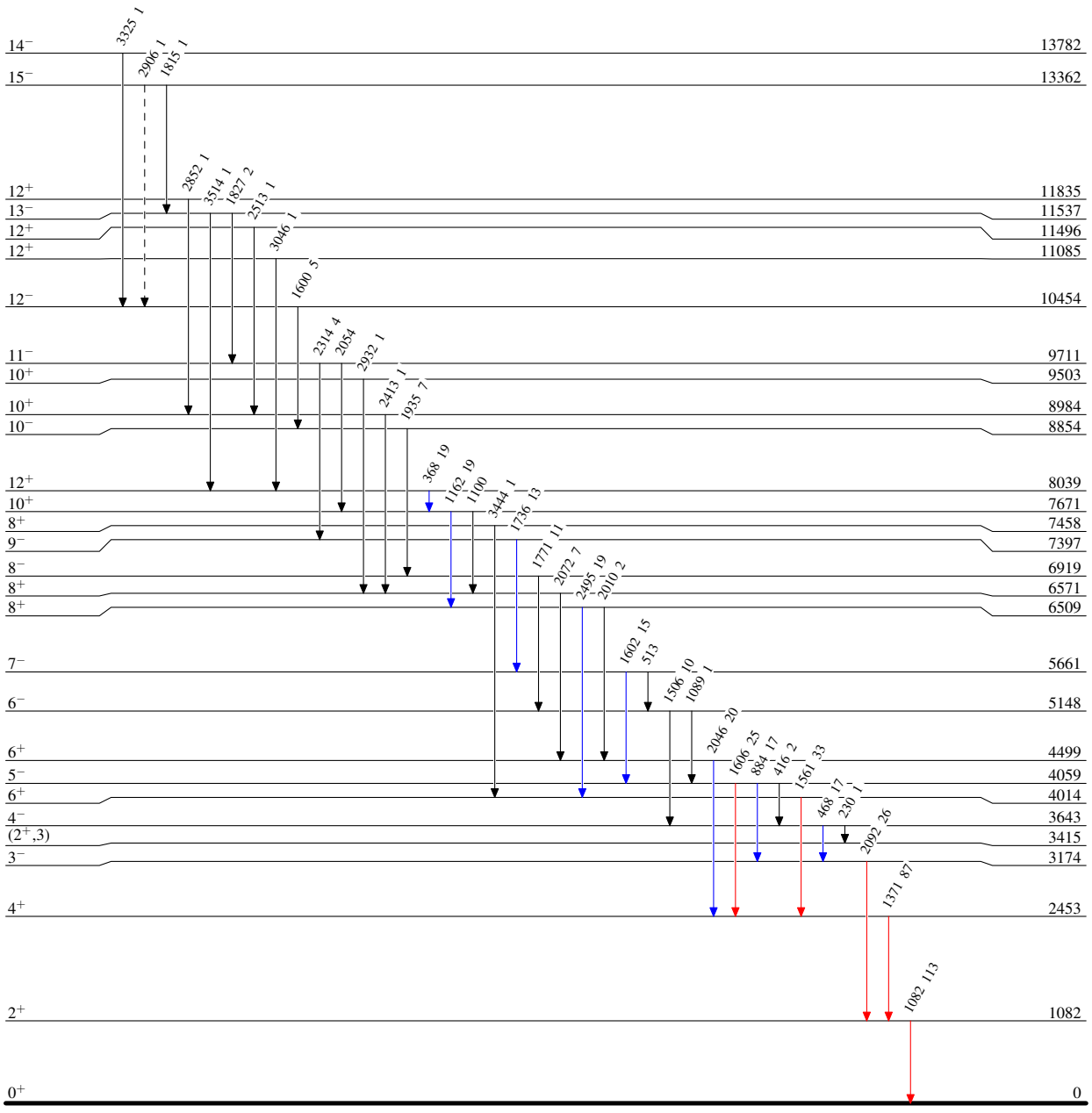
Legend

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

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

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

γ Decay (Uncertain)



$^{44}_{22}Ti_{22}$

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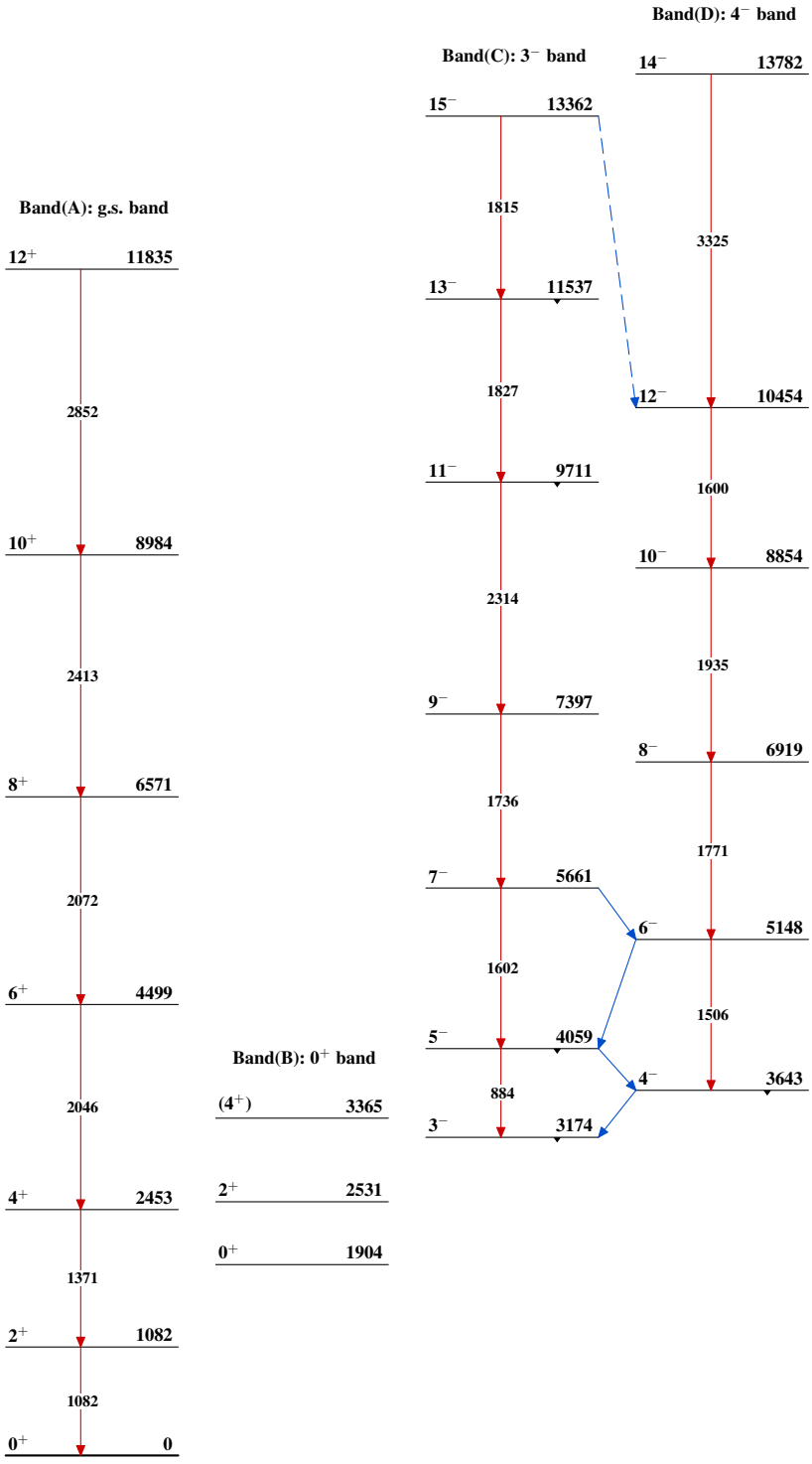

$^{44}_{22}Ti_{22}$