

²⁴Mg(²⁴Mg,2pn γ) E=83 MeV 2006Be07

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows	NDS 109, 171 (2008)	30-Oct-2007

See also ³⁰Si(¹⁸O,3n γ) and (HI,xn γ).

Measured E γ , I γ , $\gamma\gamma$, γ -N coin, γ -P coin using the EUROBALL array with 26 ‘‘Clover’’ detectors and 15 ‘‘Cluster’’ detector each containing 4 and 7 individual hyperpure Ge crystals, respectively. Protons were detected by an array of 40 Δ E-E Si detectors telescopes, and neutrons were detected using EUROBALL neutron wall consisting of 50 liquid scintillation detectors. Confirmed part of the level scheme proposed by 1998Be29 in (¹⁸O,3n γ) through E(-x)=7144 keV.

⁴⁵Ti Levels

E(α),J(β) from the Adopted Levels. Energy held fixed in least-squares fit.

E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]
0.0 [#]	7/2 ⁻	1225.62 [@] 19	7/2 ⁺	2656.66 ^a 22	13/2 ⁻	4344.7 [#] 3	19/2 ⁻
36.53 15	3/2 ⁻	1353.38 ^a 24	9/2 ⁻	3015.26 [#] 23	15/2 ⁻	5239.0 ^{&} 3	17/2 ⁺
39.39 23	5/2 ⁻	1468.33 [#] 19	11/2 ⁻	3446.6 ^{&} 3	13/2 ⁺	5640.0 [@] 4	19/2 ⁺
328.65 [@] 21	3/2 ⁺	1880.89 ^{&} 23	9/2 ⁺	3601.7 ^a 3	17/2 ⁻	6162.8 [#] 5	23/2 ⁻
742.92 ^{&} 21	5/2 ⁺	2473.71 [@] 24	11/2 ⁺	3921.8 [@] 3	15/2 ⁺	7143.2 [#] 6	27/2 ⁻

[†] From least-squares fit to E γ 's (evaluator). Normalized $\chi^2=2.98$ compared to critical $\chi^2=1.97$ May suggest that uncertainties on E γ 's are underestimated.

[‡] As proposed by 1998Be29 in (¹⁸O,3n γ), except As noted.

[#] Band(A): band based on f_{7/2} orbital, $\alpha=-1/2$.

[@] Band(B): band based on d_{3/2} orbital, $\alpha=-1/2$.

[&] Band(C): band based on d_{3/2} orbital, $\alpha=+1/2$.

^a Band(D): band based on f_{7/2} orbital, $\alpha=+1/2$.

γ (⁴⁵Ti)

E γ	I γ [†]	E _i (level)	J _i π	E _f	J _f π
(36.69 [‡] 21)		36.53	3/2 ⁻	0.0	7/2 ⁻
(40.15 [‡] 30)		39.39	5/2 ⁻	0.0	7/2 ⁻
292.1 2	38 2	328.65	3/2 ⁺	36.53	3/2 ⁻
358.3 2	20.6 7	3015.26	15/2 ⁻	2656.66	13/2 ⁻
401.3 3	1.40 6	5640.0	19/2 ⁺	5239.0	17/2 ⁺
414.0 2	29 1	742.92	5/2 ⁺	328.65	3/2 ⁺
475.2 2	3.7 1	3921.8	15/2 ⁺	3446.6	13/2 ⁺
482.4 2	13.6 5	1225.62	7/2 ⁺	742.92	5/2 ⁺
586.0 2	92 4	3601.7	17/2 ⁻	3015.26	15/2 ⁻
592.5 2	7.0 1	2473.71	11/2 ⁺	1880.89	9/2 ⁺
654.9 2	5.6 1	1880.89	9/2 ⁺	1225.62	7/2 ⁺
706.9 3	3.3 2	742.92	5/2 ⁺	36.53	3/2 ⁻
742.8 2	77 1	4344.7	19/2 ⁻	3601.7	17/2 ⁻
897.2 2	15.1 2	1225.62	7/2 ⁺	328.65	3/2 ⁺
945.1 2	12.1 3	3601.7	17/2 ⁻	2656.66	13/2 ⁻
972.6 2	1.37 3	3446.6	13/2 ⁺	2473.71	11/2 ⁺
980.4 2	51.5 8	7143.2	27/2 ⁻	6162.8	23/2 ⁻
1138.2 2	20.8 2	1880.89	9/2 ⁺	742.92	5/2 ⁺
1185.8 2	2.0 1	1225.62	7/2 ⁺	39.39	5/2 ⁻

Continued on next page (footnotes at end of table)

$^{24}\text{Mg}(^{24}\text{Mg},2\text{pn}\gamma)$ E=83 MeV **2006Be07 (continued)** $\gamma(^{45}\text{Ti})$ (continued)

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π
1188.0 2	29.6 4	2656.66	13/2 ⁻	1468.33	11/2 ⁻	1447.8 2	18.2 1	3921.8	15/2 ⁺	2473.71	11/2 ⁺
1225.8 2	0.81 3	1225.62	7/2 ⁺	0.0	7/2 ⁻	1468.2 2	100 1	1468.33	11/2 ⁻	0.0	7/2 ⁻
1248.2 2	20.8 2	2473.71	11/2 ⁺	1225.62	7/2 ⁺	1547.1 2	68 1	3015.26	15/2 ⁻	1468.33	11/2 ⁻
1303.5 3	2.5 1	2656.66	13/2 ⁻	1353.38	9/2 ⁻	1565.7 2	1.90 2	3446.6	13/2 ⁺	1880.89	9/2 ⁺
1317.5 2	2.40 5	5239.0	17/2 ⁺	3921.8	15/2 ⁺	1717.7 5	10.0 2	5640.0	19/2 ⁺	3921.8	15/2 ⁺
1330.1 3	1.1 1	4344.7	19/2 ⁻	3015.26	15/2 ⁻	1792.5 2	4.48 6	5239.0	17/2 ⁺	3446.6	13/2 ⁺
1353.6 3	3.6 1	1353.38	9/2 ⁻	0.0	7/2 ⁻	1818.0 4	72 1	6162.8	23/2 ⁻	4344.7	19/2 ⁻

[†] Relative intensity.

[‡] From the Adopted Gammas.

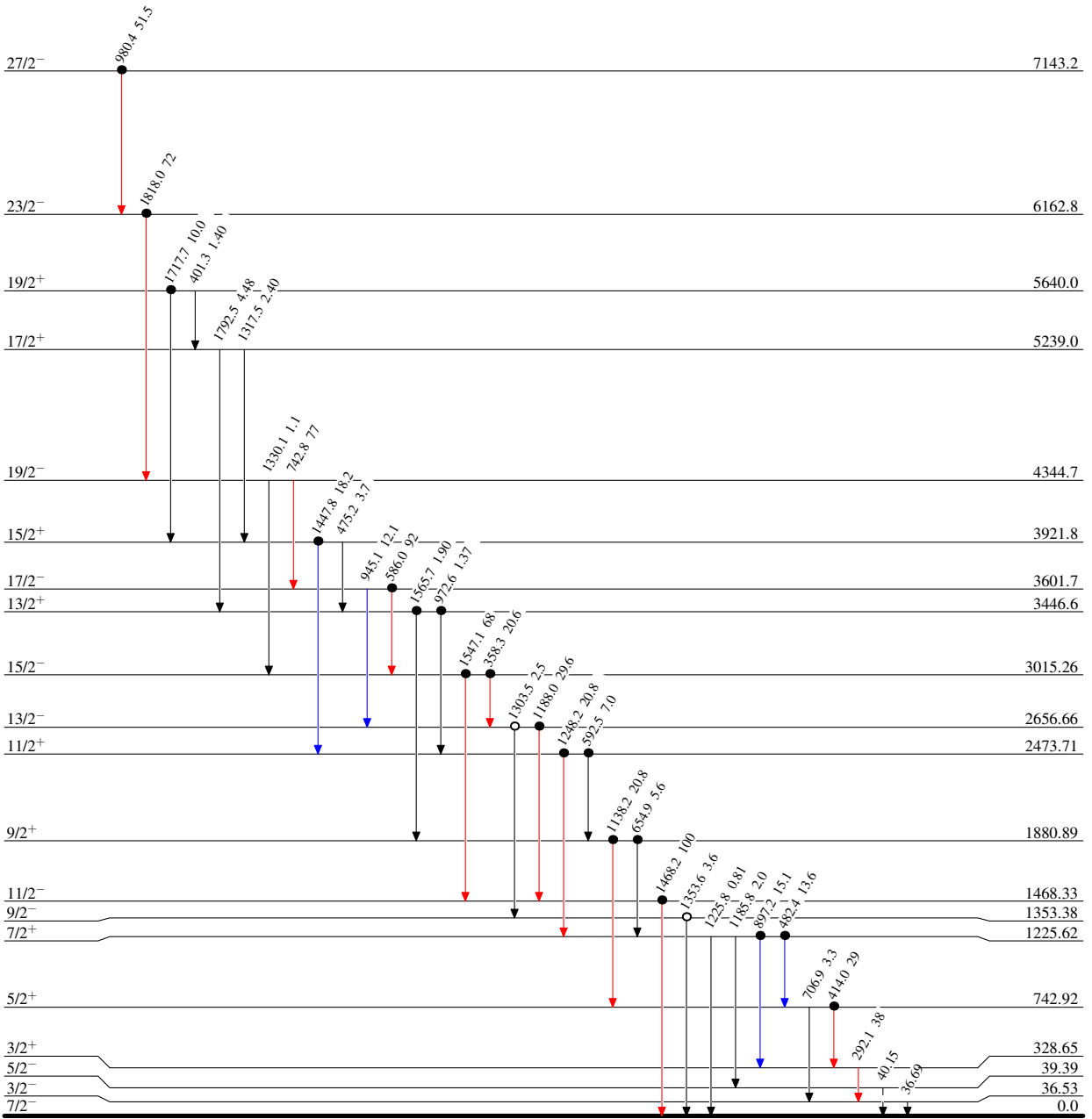
$^{24}\text{Mg}(^{24}\text{Mg},2\text{pn}\gamma) E=83 \text{ MeV}$ 2006Be07

Level Scheme

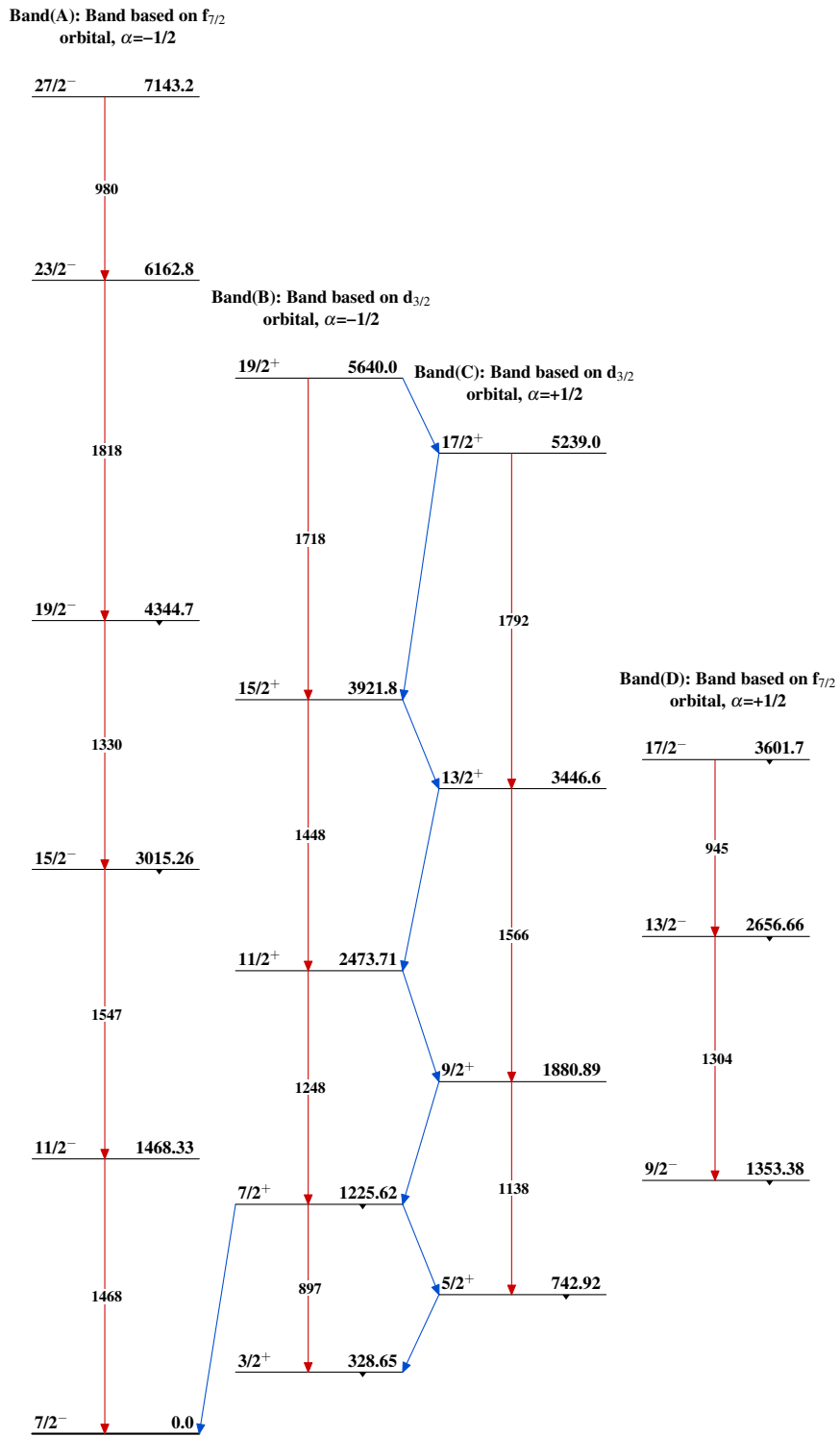
Intensities: Relative I_γ

Legend

- ▶ $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- ▶ $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- ▶ $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - - -▶ γ Decay (Uncertain)
- Coincidence
- Coincidence (Uncertain)



$^{45}_{22}\text{Ti}_{23}$

$^{24}\text{Mg}(^{24}\text{Mg},2\text{pn}\gamma) E=83 \text{ MeV}$ 2006Be07 $^{45}_{22}\text{Ti}_{23}$