

**<sup>11</sup>B(<sup>16</sup>O, $\alpha$ ) 1975Go25**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia <sup>#</sup> , A. Chakraborty <sup>##</sup>		NDS 171,1 (2021)	1-Jun-2020

Target: Self-supporting, 95% enriched <sup>11</sup>B (thickness 30  $\mu\text{g}/\text{cm}^2$ ); Projectile: <sup>16</sup>O ions from Oak Ridge tandem accelerator, E=41.6-45.4 MeV; Enge split-pole magnetic spectrometer, position-sensitive proportional counter; Measured  $\sigma(E, E_\alpha, (\theta))$ ; Deduced excited level energies, spin and parity. FWHM 140 – 160 keV.

<sup>23</sup>Na Levels

Many levels in adopted dataset for doublet 8.94 and 9.041 MeV in 1975Go25 – not listed by the evaluators in this dataset. <d $\sigma$ /d $\Omega$ > in units of mb/sr in comments section.

E(level) <sup>†</sup>	J <sup><math>\pi</math></sup> @	Comments
0.0		<d $\sigma$ /d $\Omega$ > = 0.047 (at 10°), 0.032 (22°), and 0.024 (36°) (c.m.).
440		<d $\sigma$ /d $\Omega$ > = 0.097 (at 10°), 0.055 (22°), and 0.043 (36°) (c.m.).
2076		<d $\sigma$ /d $\Omega$ > = 0.123 (at 10°), 0.072 (22°), and 0.046 (36°) (c.m.).
2391		<d $\sigma$ /d $\Omega$ > = 0.038 (at 10°), 0.017 (22°), and 0.012 (36°) (c.m.).
2672		E(level): Average of 2640.5 and 2703.8, unresolved doublet in 1975Go25. <d $\sigma$ /d $\Omega$ > = 0.021 (at 10°), 0.131 (22°), and 0.096 (36°) (c.m.).
2982		<d $\sigma$ /d $\Omega$ > = 0.058 (at 10°), 0.04 (22°), and 0.016 (36°) (c.m.).
3678		<d $\sigma$ /d $\Omega$ > = 0.040 (at 10°), 0.023 (22°), and 0.013 (36°) (c.m.).
3881		E(level): Average of 3847.9 and 3914.6, unresolved doublet in 1975Go25. <d $\sigma$ /d $\Omega$ > = 0.178 (at 10°), 0.09 (22°), and 0.056 (36°) (c.m.).
4775		<d $\sigma$ /d $\Omega$ > = 0.145 (at 10°), 0.09 (22°), and 0.044 (36°) (c.m.).
5534		<d $\sigma$ /d $\Omega$ > = 0.176 (at 10°), 0.14 (22°), and 0.101 (36°) (c.m.).
5754		E(level): Average of 5741.0 and 5766.03, unresolved doublet in 1975Go25. <d $\sigma$ /d $\Omega$ > = 0.076 (at 10°), 0.054 (22°), and 0.025 (36°) (c.m.).
6004		E(level): Average of 5965.9 and 6041.9, unresolved doublet in 1975Go25. <d $\sigma$ /d $\Omega$ > = 0.131 (at 10°), 0.07 (22°), and 0.035 (36°) (c.m.). J <sup><math>\pi</math></sup> : (1/2 <sup>-</sup> ) proposed by 1975Go25 for 6041.9 keV level of the doublet.
6298 <sup>#</sup>		E(level): Average of 6235.4, 6305.6 and 6354.2, unresolved multiplet (1975Go25 present as quadruplet). However, 1978En02 evaluation did not list 6263 keV 14 level reported in 1971Kr04, possible doublet of first two. <d $\sigma$ /d $\Omega$ > = 0.321 (at 10°), 0.21 (22°), and 0.14 (36°) (c.m.).
6644 <sup>#</sup>		E(level): Average of 6578.0, 6618.3 and 6735.5, unresolved triplet in 1975Go25. <d $\sigma$ /d $\Omega$ > = 0.071 (at 10°), 0.04 (22°), and 0.025 (36°) (c.m.).
6844		E(level): Average of 6820.2 and 6867.7, unresolved doublet in 1975Go25. <d $\sigma$ /d $\Omega$ > = 0.107 (at 10°), 0.06 (22°), and 0.03 (36°) (c.m.).
7109 <sup>#</sup>		E(level): Average of 7070.8, 7081.9, 7133.5 and 7150, unresolved quadruplet in 1975Go25. <d $\sigma$ /d $\Omega$ > = 0.228 (at 10°), 0.127 (22°), and 0.11 (36°) (c.m.).
7416 <sup>#</sup>		E(level): Average of 7385, 7412.4 and 7451.5, unresolved triplet in 1975Go25. <d $\sigma$ /d $\Omega$ > = 0.209 (at 10°), 0.164 (22°), and 0.1 (36°) (c.m.). J <sup><math>\pi</math></sup> : (1/2 <sup>+</sup> ) proposed by 1975Go25 for 7412 keV level of the triplet.
8311		E(level): Average of 8301.6 and 8319.5, unresolved doublet in 1975Go25. <d $\sigma$ /d $\Omega$ > = 0.234 (at 10°), 0.103 (22°), and 0.08 (36°) (c.m.).
8512 <sup>#</sup>		E(level): Average of 8475.7, 8503 and 8558, unresolved triplet in 1975Go25. <d $\sigma$ /d $\Omega$ > = 0.180 (at 10°), 0.180 (22°), and 0.08 (36°) (c.m.).
9840 <sup>‡</sup> 60	(3/2 <sup>+</sup> ) <sup>‡</sup>	<d $\sigma$ /d $\Omega$ > = 0.400 (at 10°), 0.24 (22°), and 0.24 (36°) (c.m.).
10300 <sup>‡</sup> 60		<d $\sigma$ /d $\Omega$ > = 0.222 (at 10°), 0.172 (22°), and 0.13 (36°) (c.m.).
10900 <sup>‡</sup> 60	(1/2 <sup>+</sup> ) <sup>‡</sup>	<d $\sigma$ /d $\Omega$ > = 0.239 (at 10°), 0.12 (22°), and 0.1 (36°) (c.m.).
11280 <sup>‡</sup> 60		<d $\sigma$ /d $\Omega$ > = 0.348 (at 10°), 0.24 (22°), and 0.24 (36°) (c.m.).
11580 <sup>‡</sup> 60	(1/2 <sup>-</sup> ) <sup>‡</sup>	<d $\sigma$ /d $\Omega$ > = 0.29 (at 10°), 0.173 (22°), and 0.14 (36°) (c.m.).
13150 <sup>‡</sup> 60	(1/2 <sup>+</sup> ) <sup>‡</sup>	<d $\sigma$ /d $\Omega$ > = 0.176 (at 10°), 0.168 (22°), and 0.13 (36°) (c.m.).

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$^{11}\text{B}(^{16}\text{O},\alpha)$  1975Go25 (continued) $^{23}\text{Na}$  Levels (continued)

E(level) <sup>†</sup>	J <sup>π</sup> <sup>@</sup>	Comments
13820 <sup>‡</sup> 60	(1/2 <sup>+</sup> ) <sup>‡</sup>	<dσ/dΩ> = 0.300 (at 10°), 0.207 (22°), and 0.15 (36°) (c.m.).
14240 <sup>‡</sup> 60	(3/2 <sup>+</sup> ) <sup>‡</sup>	<dσ/dΩ> = 0.25 (at 10°), 0.19 (22°), and 0.16 (36°) (c.m.).
14700 <sup>‡</sup> 60	(3/2 <sup>+</sup> ) <sup>‡</sup>	<dσ/dΩ> = 0.51 (at 10°), 0.33 (22°), and 0.30 (36°) (c.m.).

<sup>†</sup> From Adopted Levels (value rounded to nearest keV), except where otherwise note. 1975Go25 quote excited levels below 9840 keV from literature. Many unresolved multiplet.

<sup>‡</sup> From 1975Go25.

# Multiplet for three or more levels – not referenced in Adopted Levels.

@ From 1975Go25 based on σ(θ).