

Table 8.9 from (2004TI06): Energy levels of ^8Be

E_x (MeV \pm keV)	$J^\pi; T$	Γ_{cm} (keV)	Decay	Reactions
g.s.	$0^+; 0$	$5.57 \pm 0.25 \text{ eV}^i$	α	1, 2, 4, 5, 10, 11, 12, 13, 14, 19, 20, 21, 22, 23, 25, 28, 29, 30, 31, 33, 36, 39, 40, 41, 42, 43, 44, 45, 46, 47, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62
3.03 ± 10^i	$2^+; 0$	1513 ± 15^i	α	2, 4, 5, 10, 11, 12, 13, 14, 19, 20, 21, 22, 24, 27, 28, 29, 30, 31, 33, 36, 40, 41, 42, 43, 44, 50, 51, 53, 54, 61
ij	2^+			4, 24, 27, (29)
11.35 ± 150^i	$4^+; 0$	$\approx 3500^b$	α	4, 12, 13, 19, 21, 29, 30, 31, 41, 51, 53, 54
16.626 ± 3	$2^+; 0 + 1$	108.1 ± 0.5	γ, α	2, 4, 10, 11, 13, 14, 19, 20, 21, 27, 29, 30, 31, 40, 41, 44, 51, 53
16.922 ± 3	$2^+; 0 + 1$	74.0 ± 0.4	γ, α	2, 4, 10, 11, 13, 14, 19, 20, 21, 29, 30, 31, 40, 41, 44, 51, 53
17.640 ± 1.0^f	$1^+; 1$	10.7 ± 0.5	γ, p	5, 11, 14, 16, 19, 20, 29, 30, 31, 41, 53
18.150 ± 4	$1^+; 0$	138 ± 6	γ, p	11, 14, 16, 19, 20, 29, 30, 41, 44
18.91	$2^-; 0(+1)$	122^e	γ, n, p	11, 14, 15, 16, 19, 23
19.07 ± 30	$3^+; (1)$	270 ± 20	γ, p	11, 14, 16, 19, 29, 30
19.235 ± 10^i	$3^+; (0)$	227 ± 16^i	n, p	15, 16, 19, 29, 30, 31, 41, 64
19.40	1^-	$\approx 645^i$	n, p	11, 15, 16, 29
19.86 ± 50^g	$4^+; 0$	700 ± 100	p, α	4, 11, 18, 21, 22, 30, 31, 41
20.1^h	$2^+; 0$	880 ± 20^i	n, p, α	4, 15, 16, 18, 19, 22, 41
20.2	$0^+; 0$	720 ± 20^i	α	4, 19, 41
20.9	4^-	1600 ± 200	p	16
21.5	$3(+)$	1000	γ, n, p	14, 15, 41
22.0^c	$1^-; 1$	≈ 4000	γ, p	14

Table 8.9 from (2004TI06): Energy levels of ^8Be (continued)

E_x (MeV \pm keV)	$J^\pi; T$	Γ_{cm} (keV)	Decay	Reactions
22.05 \pm 100		270 \pm 70		29 , 31
22.2	2 ⁺ ; 0	\approx 800	n, p, d, α	4 , 9 , 13 , 15 , 16 , 18 , 41
22.63 \pm 100		100 \pm 50		31
22.98 \pm 100		230 \pm 50		31
24.0 ^c	(1, 2) ⁻ ; 1	\approx 7000	γ , p, α	14 , 18 , 41
25.2	2 ⁺ ; 0		p, d, α	4 , 9 , 18 , 41
25.5	4 ⁺ ; 0	broad	d, α	9
27.4941 \pm 1.8 ^d	0 ⁺ ; 2	5.5 \pm 2.0	γ , n, p, d, t, ^3He , α	5 , 7 , 9 , 35
(28.6)		broad	γ , p	14
(32) ⁱ		1 MeV ⁱ		41
(\approx 41) ⁱ				9
(\approx 43) ⁱ				9
(\approx 50) ⁱ				9

^a See also [Table 8.10](#) and [reaction 4](#).

^b See, however, [reaction 29](#).

^c Giant resonance: see [reaction 14](#).

^d For the parameters of this state please see [Table 8.5 in \(1984AJ01\)](#).

^e From R -matrix fit: see [reaction 23](#).

^f $\Gamma_{\gamma_0}/\Gamma_{(\gamma_0+\gamma_1)} = 0.72 \pm 0.07$ ([1995ZA03](#)).

^g $\Gamma_\alpha/\Gamma_p = 2.3 \pm 0.5$ ([1992PU06](#)).

^h $\Gamma_\alpha/\Gamma_p = 4.5 \pm 0.6$ ([1992PU06](#)).

ⁱ From data reviewed in this evaluation.

^j Intruder state at ≈ 9 MeV, deduced from R -matrix analysis of β -delayed 2α breakup spectra ([2000BA89](#)). The placement of this level is dependent on the channel radius used in the R -matrix fit ([1986WA01](#), [2000BA89](#)). However, ([1986WA01](#)) finds no need to introduce intruder states below $E_x = 26$ MeV.