^{9}Be(d,p),(d,pγ) 1979Aj01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, C. G. Sheu and J. L. Godwin, et al.	NP A745 155 (2004)	31-Mar-2004

1954Bl02: ^{9}Be(d,p) E=11.9 MeV, measured $\sigma(\theta,E_P)$. ^{10}Be levels deduced L.
1967Bl02: ^{9}Be(d,p) E=1-6 MeV, measured polarization (E_P,θ).
1968Fi09: ^{9}Be(d,p) E=1.7 MeV, measured Doppler-shift attenuation. ^{10}Be levels deduced $T_{1/2}$.
1969Al17: ^{9}Be(d,p) E=3.25 MeV, measured $\sigma(E_P)$, γ-γ-coin. ^{10}Be level deduced $T_{1/2}$, 6.18 MeV Γ-level, γ-branching.
1969Ro12: ^{9}Be(d,P γ) E=2.8 MeV, measured $\sigma(\theta_\gamma)$, θ_P), P-γ-coin, γ-$\gamma(\theta)$. ^{10}Be deduced levels, J, π, S.
1971Cr05: ^{9}Be(d,P γ) E=4-5 MeV, θ_P=0 degree, measured ($E,E_P,E_\gamma,\theta_{P\gamma}$). Deduced channel-spin ratio.
1971Ko41: ^{9}Be(d,p) E=1-15 MeV, analyzed P_P(E,THETA).
1972Ar31: ^{9}Be(d,p) E<2.5 MeV, measured σ(E).
1973Do02: ^{9}Be(d,p) E not given, analyzed $\sigma(\theta)$. ^{10}Be deduced levels, J, π, Γ-level.
1974An27: ^{9}Be(d,p) E=17.3 MeV, measured $\sigma(E_P,\theta)$. ^{10}Be deduced levels, L_N, S, Γ-level.
1974Bo48: ^{9}Be(d,p) E=0.9-2.5 MeV, measured $\sigma(E,E_P)$. Deduced S.
1974Fr02: ^{9}Be(d,p) E=0.6-2.7 MeV, measured $\sigma(\theta)$.
1975Hu18: ^{9}Be(d,P γ) E=1.5 MeV, measured P γ-coin. ^{10}Be level deduced J, π.
1975Zw01: ^{9}Be(d,p) E=0.9-3.1 MeV, measured $\sigma(E,\theta)$, σ(E). ^{10}Be levels deduced S.
1976Da15: ^{9}Be(pol. d,P) E=15 MeV, measured $\sigma(\theta)$, A_Y(THETA). ^{10}Be levels deduced S, Γ, J-admixtures. DWBA.
1977Ba39: ^{9}Be(pol. d,P) E=12 MeV, measured iT_{11}, T_{20}, T_{22}(THETA).
1978Al25: ^{9}Be(d,pγ) E=1.5 MeV, measured P γ angular correlation. Deduced population numbers.
1980De45: ^{9}Be(pol. d,P) E=1.4-2.2 MeV, measured $\sigma(\theta)$, vector analyzing power vs. θ,E. Deduced resonance, direct process interference.
1982Go05: ^{9}Be(d,p) E=12 MeV, analyzed data. ^{10}Be level deduced S. DWBA.
1984De46: ^{9}Be(pol. d,P) E=2-2.8 MeV, measured $\sigma(\theta)$, polarization asymmetry ratio vs. θ. Deduced potential parameters.
1986Go23: ^{9}Be(d,p) E=18.6 MeV, measured $\sigma(\theta)$. Deduced vertex constants, optical model parameters. DWBA.
1987Va13: ^{9}Be(d,P γ) E=12.5 MeV, measured $\sigma(\theta_P,\theta_\gamma)$. ^{10}Be deduced spin tensor values.
1995Ly03: ^{9}Be(pol. d,P) E=2.5-3 MeV, measured vector analyzing power vs. θ,E. Deduced model parameters. DWBA and R-matrix.
1997Ya02,1997Ya08: ^{9}Be(d,p) $E_{C.M.}$=57-141 keV, measured astrophysical S-factor.
1999Bu26: ^{9}Be(d,p) E=1.0 MeV, measured E_γ, $I_{\gamma(\theta)}$. ^{10}Be deduced level energy.
2000Ge16: ^{9}Be(d,p) E=3-11 MeV, measured $\sigma(\theta)$, integral σ.
2001Ze09: ^{9}Be(d,p) E=15.2 MeV, measured σ(E,θ). Deduced spin-tensor components of density matrix correlation features.
L: Label=l_n from (1974An27).

^{10}Be Levels

E(level)	J^π	$T_{1/2}$	L	S	Comments
0	0^+		1	≈1.06	
3368.34 *43*	2^+	0.125 ps *12*	1	0.17	E(level): from (1999Bu26). Γ: from average of $T_{1/2}$=131 fs *14* (1968Fi09) and $T_{1/2}$=111 fs *21* from (1966Wa10).
5958.3 *3*	2^+	<55 fs	1	0.54	E(level): from ^{9}Be(n,γ) thermal neutron capture (1966Gr18). This level and its partner are populated roughly 15:1 In (n,γ) and 1:1 In (d,p) so when (1969Ro12) deduced that the separation between members of the doublet is 1.6 keV *5* the energy of the upper was fixed. J^π: from (1969Ro12).
5959.9 *6*	1^-		0		E(level): from (1969Ro12) the separation between members of the doublet is ΔE=1.6 keV *5*; so using E=5958.3 keV *3* for the lower transition the energy E_x= 5959.9 *6* is obtained for the upper state. J^π: from (1969Ro12).
6179.3 *7*	0^+	0.76 ps *+4–3*			E(level): from (1969Al17) who summed the level differences for ^{10}Be(6179 to 5959.9) = 219.4 keV *3* (1969Al17) ^{10}Be(5959.9 to 3368.0) = 2590.30 keV *25* (1966Gr18) ^{9}Be(n,γ) and ^{10}Be(3368.0 to 0) =3368.0 keV *2* (1966Gr18).

Continued on next page (footnotes at end of table)

^{9}Be(d,p),(d,pγ) 1979Aj01 (continued)

^{10}Be Levels (continued)

E(level)	J^{π}	$T_{1/2}$	L	S	Comments
6263.3 *50*	2^-		0+2		E(level): from (1954Ju23,1969Al17). In (1954Ju23) the Q(β^-) values of ^{10}Be(6.18, 6.26) are reported As Q=−1.592 MeV *7* and Q=1.676 MeV *7*, respectively. A difference of ΔE=84 keV *10*. Using E_x=6179.3 MeV *7* for ^{10}Be(6.18) the energy 6263 keV *10* is deduced for ^{10}Be(6.26). The authors of (1969Al17) had assumed an uncertainty of 5 keV In the level energy difference, but this seems optimistic.
7.37×10^3			2	0.36	E(level): from (1974An27).
7.54×10^3			1	0.20	E(level): from (1974An27).
9.27×10^3		150 keV *20*			E(level): Γ: from (1974An27).
9.4×10^3		291 keV *20*			E(level): from (2001Cu06). Γ: from (1974An27).
10.57×10^3 *3*					E(level): from (1974An27).
11.76×10^3 *2*		121 keV *10*			E(level): Γ: from (1974An27).

γ(^{10}Be)

E_i(level)	J_i^{π}	E_γ	I_γ	E_f	J_f^{π}	Mult.	Comments
3368.34	2^+	3367.73 *43*	100	0	0^+	E2	Γ_γ=3.66×10^{-3} eV *35*
5958.3	2^+	2589.9 *3*	>90‡	3368.34	2^+	M1	for comments on branching ratio see (1974Aj01). Also note branching ratio from (1969Ro12).
		5956.4 *3*	<10‡	0	0^+	E2	
5959.9	1^-	2591.5 *6*	17‡ *8*	3368.34	2^+	E1	for comments on branching ratio see (1974Aj01). Also note branching ratio from (1969Ro12). Branching=17 *+6−10* and 83 *+10−6*.
		5958.0 *6*	83‡ *8*	0	0^+	E1	
6179.3	0^+	219.4 *3*	24† *2*	5959.9	1^-	E1	Γ_γ=0.14×10^{-3} eV *5* also note that (1969Al17) deduced branching ratios that were not reproducible. This problem causes their reported observation of ^{10}Be(6.18:0^+) to g.s.(0^+) decay not to Be accepted; see discussion In (1975Wa06). E_γ: from (1969Al17).
		2810.9 *7*	76† *2*	3368.34	2^+	E2	Γ_γ=0.46×10^{-3} eV *28*
6263.3	2^-	303.4	≤1‡	5959.9	1^-		branching ratio from (1969Ro12).
		2894.9	99‡ *1*	3368.34	2^+	E1	
		6261.2	1‡ *1*	0	0^+	M2	

† From (1975Wa06).
‡ From (1969Ro12).

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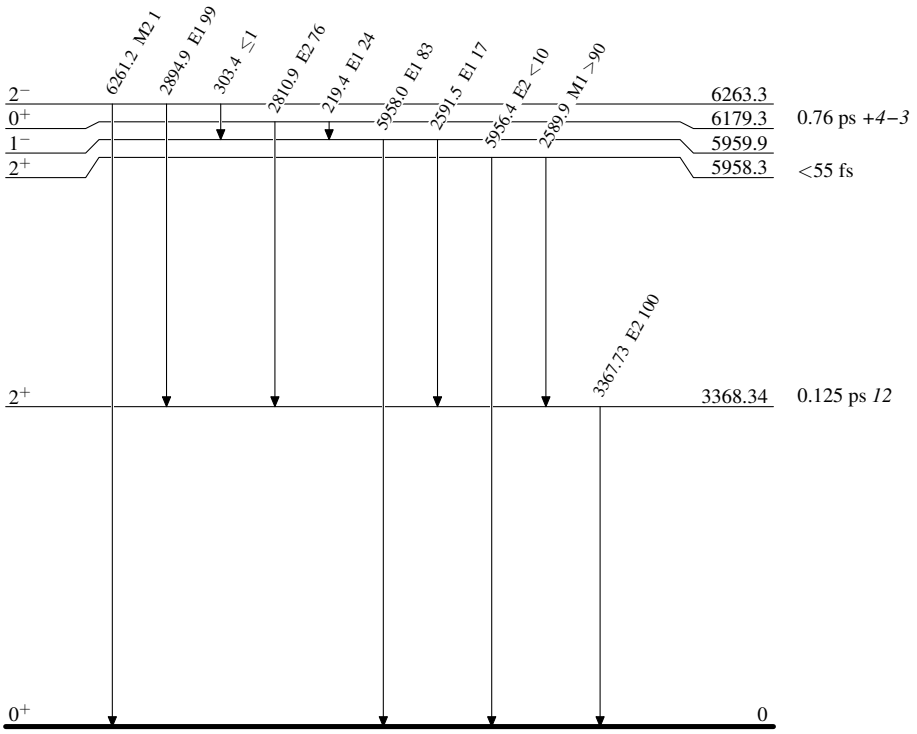
Level Scheme

Intensities: % photon branching from each level



$^{10}_{4}Be_{6}$