Transition Width

13 The (Delayed-) Particle Record

Must follow the **LEVEL** *record for the level which is fed by the particle. Records for particles which are unassigned in a level scheme should precede the first level of the data set.*

Field (Col.)	Name	Description	Reference
1-5	NUCID	Nuclide identification	V.1
6		Blank Any alphanumeric character other than '1' for continuation records	
7		Must be blank	
8	D	Blank for prompt-, Letter 'D' for delayed-particle emission	
9	Particle	The symbol for the (delayed) particle (N=neutron, P=proton, A=alpha particle) is required)	
10-19	E	Energy of the particle in keV	V.18
20-21	DE	Standard uncertainty in E	V.11
22-29	IP	Intensity of (delayed) particles in *percent* of the total (delayed-) particle emissions	V.13
30-31	DIP	Standard uncertainty in IP	V.11
32-39	EI	Energy of the level in the 'intermediate' (mass=A+1 for n, p;A+4 for α) nuclide in case of delayed particle	V.13
40-49	T	Width of the transition in keV	V.14
50-55	DT	Uncertainty in T	V.12

- Transition widths are rarely given in experimental delayed-particle decay Studies.
- 2024So16: ^{11}Be($\beta\alpha$) decay

	$2 \times 3/2^+$ Ref. [9]	$2 \times 3/2^+$	$2 \times 3/2^+ + 1/2^+$
E_1 (keV)	9 846(1)[10]	9 901(1)[30]	9 912(6)[35]
$B_1/\sqrt{N}$	0.161(2)	0.152(1)[2]	0.140(10)[3]
θ_{11}^2	1.31(2)	1.04(1)[17]	0.92(6)[14]
θ_{12}^2	0.84(2)	0.44(1)[13]	0.42(3)[14]
Γ_{11} (keV)	233(3)[3]	263(2)[4]	251(4)[7]
Γ_{12} (keV)	20.4(3)[3]	18.9(3)[2]	20(1)[1]

For state 1, via R-matrix analysis:
Γ_{11}: $\beta\alpha_0$ decay transition width
Γ_{12}: $\beta\alpha_1$ decay transition width

Java-NDS Original Rendering

E_α^{lab} (keV)†	$E(^7Li)$	$E_x(^{11}B)$ (keV)	T‡	L	Comments
425	477.612	9810	9 *7*	1	$E_x(^{11}B)$ (keV): From $E_x(^{11}B)$=9810 keV *25* (stat.) *40* (sys.). This state was assumed to have J^π=(1/2$^+$) in the R-matrix analysis. $T_{1/2}$: From Γ=9 keV *3* (stat.) *6* (sys.).
490	477.612	9912	20 *1*	1	$E_x(^{11}B)$ (keV): From $E_x(^{11}B)$=9912 keV *6* (stat.) *35* (sys.). This state was assumed to have J^π=3/2$^+$ in the R-matrix analysis. $T_{1/2}$: From Γ=20 keV *1* (stat.) *1* (sys.).
730	0	9810	146 *41*	1	$T_{1/2}$: From Γ=146 keV *32* (stat.) *25* (sys.).
794	0	9912	251 *8*	1	$T_{1/2}$: From Γ=251 keV *4* (stat.) *7* (sys.).
1611	477.612	11672	18	1	$E_x(^{11}B)$ (keV): From $E_x(^{11}B)$=11672 keV *200* (stat.) *40* (sys.). This state was assumed to have J^π=3/2$^+$ in the R-matrix analysis. $T_{1/2}$: From Γ=18 keV *50* (stat.) *90* (sys.).
1915	0	11672	854 *699*	1	$T_{1/2}$: From Γ=854 keV *200* (stat.) *670* (sys.).

† Laboratory energy of the emitted α-particle deduced by the compiler using relativistic kinematics and the R-matrix fit parameters listed in Table III for the best fit involving 2 states with J^π=3/2$^+$ and one state with J^π=(1/2$^+$). Mass excess of the nuclei involved are from (2021Wa16: AME-2020).

‡ Transition width.

Column T was translated to $T_{1/2}$ in comments.

Kiana has labeled this column; otherwise, T is not automatically defined

Old ENSDF to PDF Code’s Output

- The old code outputs it correctly, but the user still has to label T as transition width

E_α^{lab} (keV)‡	E(^{7}Li)	T§	L	E_x(^{11}B) (keV)	Comments
425	477.612	7 *7*	1	9810	E_x(^{11}B) (keV): From E_x(^{11}B)=9810 keV *25* (stat.) *40* (sys.). This state was assumed to have J^π=(1/2$^+$) in the R–matrix analysis. T: From Γ=9 keV *3* (stat.) *6* (sys.).

§ Transition width.

Java-NDS Current Rendering

E_{α}^{lab} (keV)†	E(^{7}Li)	E_x(^{11}B) (keV)	Γ‡	L	Comments
425	477.612	9810	9 *7*	1	E_x(^{11}B) (keV): From E_x(^{11}B)=9810 keV *25* (stat.) *40* (sys.). This state was assumed to have J^{π}=(1/2^{+}) in the R-matrix analysis. Γ: From Γ=9 keV *3* (stat.) *6* (sys.).
490	477.612	9912	20 *1*	1	E_x(^{11}B) (keV): From E_x(^{11}B)=9912 keV *6* (stat.) *35* (sys.). This state was assumed to have J^{π}=3/2^{+} in the R-matrix analysis. Γ: From Γ=20 keV *1* (stat.) *1* (sys.).
730	0	9810	146 *41*	1	Γ: From Γ=146 keV *32* (stat.) *25* (sys.).
794	0	9912	251 *8*	1	Γ: From Γ=251 keV *4* (stat.) *7* (sys.).
1611	477.612	11672	18	1	E_x(^{11}B) (keV): From E_x(^{11}B)=11672 keV *200* (stat.) *40* (sys.). This state was assumed to have J^{π}=3/2^{+} in the R-matrix analysis. Γ: From Γ=18 keV *50* (stat.) *90* (sys.).
1915	0	11672	854 *699*	1	Γ: From Γ=854 keV *200* (stat.) *670* (sys.).

† Laboratory energy of the emitted α-particle deduced by the compiler using relativistic kinematics and the R-matrix fit parameters listed in Table III for the best fit involving 2 states with J^{π}=3/2^{+} and one state with J^{π}=(1/2^{+}). Mass excess of the nuclei involved are from (2021Wa16: AME-2020).

‡ Transition width.

Only appears if you specifically label the column.

- Decided to change T to Γ, but these are partial widths not the total width.
- Is this change OK to everyone?