RADIOACTIVE DECAY MODES (D8)

Decay Mode	Symbol	Equation	Nucleus Changes
Alpha Emission	α	${}^{A}_{Z}X \rightarrow {}^{A-4}_{Z-2}X + {}^{4}_{2}\alpha$	$(A-4, Z-2)$
Proton Emission ***2-Proton Emission***	p $2p$	${}^{A}_{Z}X \rightarrow {}^{A-1}_{Z-1}X + {}^{1}_{1}p$ ${}^{A}_{Z}X \rightarrow {}^{A-2}_{Z-2}X + 2{}^{1}_{1}p$	$(A-1, Z-1)$ $(A-2, Z-2)$
Neutron Emission ***2-Neutron Emission***	n $2n$	${}^{A}_{Z}X \rightarrow {}^{A-1}_{Z}X + {}^{1}_{0}n$ ${}^{A}_{Z}X \rightarrow {}^{A-2}_{Z}X + 2{}^{1}_{0}n$	$(A-1, Z)$ $(A-2, Z)$
Electron Capture	ε	${}^{A}_{Z}X + {}^{0}_{-1}e \rightarrow {}^{A}_{Z-1}X + {}^{0}_{0}\nu_e$	$(A, Z-1)$
Positron Emission	e^+	${}^{A}_{Z}X \rightarrow {}^{A}_{Z-1}X + {}^{0}_{+1}e + {}^{0}_{0}\nu_e$	$(A, Z-1)$
Beta-Plus Decay	β^+	$\beta^+ = \varepsilon + e^+$ (Combined rate of ε and e^+)	Variable
Beta-Minus Decay	β^-	${}^{A}_{Z}X \rightarrow {}^{A}_{Z+1}X + {}^{0}_{-1}e + {}^{0}_{0}\overline{\nu}_e$	$(A, Z+1)$
Double Beta-Minus Decay	$2\beta^-$	${}^{A}_{Z}X \rightarrow {}^{A}_{Z+2}X + 2{}^{0}_{-1}e + 2{}^{0}_{0}\overline{\nu}_e$	$(A, Z+2)$
Double Beta-Plus Decay	$2\beta^+$	${}^{A}_{Z}X \rightarrow {}^{A}_{Z-2}X + 2{}^{0}_{+1}e + 2{}^{0}_{0}\nu_e$	$(A, Z-2)$
Beta-Minus-Delayed Neutron Emission	$\beta^- n$	${}^{A}_{Z}X \rightarrow {}^{A}_{Z+1}X + {}^{0}_{-1}e + {}^{0}_{0}\overline{\nu}_e$ ${}^{A}_{Z+1}X \rightarrow {}^{A-1}_{Z+1}X + {}^{1}_{0}n$	$(A-1, Z+1)$
Beta-Minus-Delayed 2-Neutron Emission	$\beta^- 2n$	${}^{A}_{Z}X \rightarrow {}^{A}_{Z+1}X + {}^{0}_{-1}e + {}^{0}_{0}\overline{\nu}_e$ ${}^{A}_{Z+1}X \rightarrow {}^{A-1}_{Z+1}X + 2{}^{1}_{0}n$	$(A-2, Z+1)$
Beta-Minus-Delayed 3-Neutron Emission	$\beta^- 3n$	${}^{A}_{Z}X \rightarrow {}^{A}_{Z+1}X + {}^{0}_{-1}e + {}^{0}_{0}\overline{\nu}_e$ ${}^{A}_{Z+1}X \rightarrow {}^{A-1}_{Z+1}X + 3{}^{1}_{0}n$	$(A-3, Z+1)$
Beta-Plus-Delayed Proton Emission	$\beta^+ p$	${}^{A}_{Z}X \rightarrow {}^{A}_{Z-1}X + {}^{0}_{+1}e + {}^{0}_{0}\nu_e$ ${}^{A}_{Z-1}X \rightarrow {}^{A-1}_{Z-2}X + {}^{1}_{1}p$	$(A-1, Z-2)$
Beta-Plus-Delayed 2-Proton Emission	$\beta^+ 2p$	${}^{A}_{Z}X \rightarrow {}^{A}_{Z-1}X + {}^{0}_{+1}e + {}^{0}_{0}\nu_e$ ${}^{A}_{Z-1}X \rightarrow {}^{A-2}_{Z-3}X + 2{}^{1}_{1}p$	$(A-2, Z-3)$
Beta-Plus-Delayed 3-Proton Emission	$\beta^+ 3p$	${}^{A}_{Z}X \rightarrow {}^{A}_{Z-1}X + {}^{0}_{+1}e + {}^{0}_{0}\nu_e$ ${}^{A}_{Z-1}X \rightarrow {}^{A-3}_{Z-4}X + 3{}^{1}_{1}p$	$(A-3, Z-4)$

Decay Mode	Symbol	Equation	Nucleus Changes
Beta-Minus-Delayed Alpha Emission	$\beta^-\alpha$	${}^{A}_{Z}X \rightarrow {}^{A}_{Z+1}X + {}^{0}_{-1}e + {}^{0}_{0}\overline{\nu}_e$ ${}^{A}_{Z+1}X \rightarrow {}^{A-4}_{Z-1}X + {}^{4}_{2}\alpha$	$(A-4, Z-1)$
Beta-Plus-Delayed Alpha Emission	$\beta^+\alpha$	${}^{A}_{Z}X \rightarrow {}^{A}_{Z-1}X + {}^{0}_{+1}e + {}^{0}_{0}\nu_e$ ${}^{A}_{Z-1}X \rightarrow {}^{A-4}_{Z-3}X + {}^{4}_{2}\alpha$	$(A-4, Z-3)$
Beta-Minus-Delayed Deuteron Emission	β^-d	${}^{A}_{Z}X \rightarrow {}^{A}_{Z+1}X + {}^{0}_{-1}e + {}^{0}_{0}\overline{\nu}_e$ ${}^{A}_{Z+1}X \rightarrow {}^{A-2}_{Z}X + {}^{2}_{1}d$	$(A-2, Z)$
Beta-Minus-Delayed Triton Emission	β^-t	${}^{A}_{Z}X \rightarrow {}^{A}_{Z+1}X + {}^{0}_{-1}e + {}^{0}_{0}\overline{\nu}_e$ ${}^{A}_{Z+1}X \rightarrow {}^{A-3}_{Z}X + {}^{3}_{1}t$	$(A-3, Z)$
Internal (Isomeric) Transition	IT	${}^{Am}_{Z}X \rightarrow {}^{A}_{Z}X + {}^{0}_{0}\gamma$	(A, Z)
Spontaneous Fission	SF	Variable	Variable
Beta-Plus-Delayed Fission	β^+SF	${}^{A}_{Z}X \rightarrow {}^{A}_{Z-1}X + {}^{0}_{+1}e + {}^{0}_{0}\nu_e$ Variable	Variable
Beta-Minus-Delayed Fission	β^-SF	${}^{A}_{Z}X \rightarrow {}^{A}_{Z+1}X + {}^{0}_{-1}e + {}^{0}_{0}\overline{\nu}_e$ Variable	Variable
Heavy Cluster Emission **Cluster Decay**	${}^{A}X$ CD	Variable	Variable

Sources:

- Decay Mode [1]
- Symbol [1] [2]
- Equation[2] [3]
- Nucleus Changes [2] [3]