

Types of radioactive decay

1. Emitting two neutrons + two protons- α particle
2. Emitting an electron- β particle
3. Capture of an electron by the nucleus where it combines with a proton to form a neutron- ec
4. Spontaneous fission- decay of U and Th only- nuclei divided into two nuclei of approximately equal mass

Radioactive isotope	Daughter isotope	Type of decay	Decay constant (a^{-1})	Half-life $t_{1/2}$ (a)
$^{14}_6\text{C}$	$^{14}_7\text{N}$	β	1.21×10^{-4}	5730
$^{40}_{19}\text{K}$	$^{40}_{20}\text{Ca}, ^{40}_{18}\text{Ar}$	β, ec	5.543×10^{-10}	1.25×10^9
$^{87}_{37}\text{Rb}$	$^{87}_{38}\text{Sr}$	β	1.42×10^{-11}	48.8×10^9
$^{147}_{62}\text{Sm}$	$^{143}_{60}\text{Nd}$	α	6.54×10^{-12}	106.0×10^9
$^{176}_{71}\text{Lu}$	$^{176}_{72}\text{Hf}$	β	1.94×10^{-11}	35.7×10^9
$^{182}_{72}\text{Hf}$	$^{182}_{74}\text{W}$	2β	7.7×10^{-8}	9×10^6
$^{187}_{75}\text{Re}$	$^{187}_{76}\text{Os}$	β	1.666×10^{-11}	41.6×10^9
$^{232}_{90}\text{Th}$	$^{208}_{82}\text{Pb}$	$6\alpha, 4\beta$	4.9475×10^{-11}	13.9×10^9
$^{235}_{92}\text{U}$	$^{207}_{82}\text{Pb}$	$7\alpha, 4\beta$	9.8485×10^{-10}	0.704×10^9
$^{238}_{92}\text{U}$	$^{206}_{82}\text{Pb}$	$8\alpha, 6\beta$	1.55125×10^{-10}	4.47×10^9

Radioactive decay equation and geochronology

Isochron method

