Radioactive decay

International Baccalaureate · IB Diploma · Physics · HL · Vocabulary in context

Word	Example
isotope /ˈaɪsətəʊp/	Carbon-14 is an **isotope** of carbon. Carbon-14
strong nuclear force /strɒŋ ˈnjuːklɪə fɔːs/	The **strong nuclear force** holds protons and neutrons together.
mass defect /mæs ˈdiːfekt/	The **mass defect** is the mass lost when a nucleus forms.
binding energy /ˈbaɪndɪŋ ˈenədʒi/	The **binding energy** holds the nucleus together.
unified atomic mass unit /ˈjuːnɪfaɪd əˈtɒmɪk mæs ˈjuːnɪt/	A proton has a mass of about one **unified atomic mass unit**.
binding energy per nucleon /ˈbaɪndɪŋ ˈenədʒi pɜː ˈnjuːklɪən/	Iron has the highest **binding energy per nucleon**.
fusion /ˈfjuːʒn/	**Fusion** powers the Sun.
fission /ˈfɪʃn/	**Fission** splits a uranium nucleus.
radioactive decay /ˌreɪdɪəʊˈæktɪv dɪˈkeɪ/	**Radioactive decay** changes one element into another.
random /ˈrændəm/	Decay is **random**: we cannot say when one nucleus will decay.
spontaneous /spɒnˈteɪnɪəs/	Decay is **spontaneous**: nothing outside starts it.
alpha particle /ˈælfə ˈpɑːtɪkl/	An **alpha particle** is a helium nucleus.

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antineutrino /ˌæntɪnjuːˈtriːnəʊ/	Beta-minus decay also gives out an **antineutrino**. β
positron /ˈpɒzɪtrɒn/	A **positron** is like an electron with a positive charge.
neutrino /njuːˈtriːnəʊ/	A **neutrino** has almost no mass.
gamma ray /ˈgæmə reɪ/	A **gamma ray** can pass through thick metal.
ionisation	Alpha particles cause a lot of **ionisation** in air.
activity /ækˈtɪvɪti/	The **activity** is the number of decays each second.
becquerel /ˈbekwərəl/	One **becquerel** is one decay per second.
count rate /kaʊnt reɪt/	The **count rate** is 120 counts per minute. 120
half-life /hɑːf laɪf/	After one **half-life**, half the nuclei have decayed.
background radiation /ˈbækgraʊnd ˌreɪdɪˈeɪʃn/	**Background radiation** is all around us.
decay constant /dɪˈkeɪ ˈkɒnstənt/	A large **decay constant** means fast decay.