Particle physics

A-Level Physics · Vocabulary in context

Word	Example
alpha particle /ˈælfə ˈpɑːtɪkl/	An **alpha particle** has two protons and two neutrons.
deflection /dɪˈflekʃn/	The needle shows a large **deflection**.
nucleus /ˈnjuːklɪəs/	The **nucleus** is at the centre of an atom.
electrostatic /ɪˌlektrəʊˈstætɪk/	Two charged balls push apart with an **electrostatic** force.
energy /ˈenədʒi/	Food gives your body the **energy** it needs to move.
proton /ˈprəʊtɒn/	A **proton** has a positive charge.
neutron /ˈnjuːtrɒn/	A **neutron** has no charge.
electron /ɪˈlektrɒn/	An **electron** has a negative charge.
nuclide /ˈnjuːklaɪd/	Carbon-14 is a **nuclide**. Carbon-14
nucleon number /ˈnjuːklɪən ˈnʌmbə/	The **nucleon number** counts protons and neutrons.
nucleon /ˈnjuːklɪən/	A proton or a neutron is a **nucleon**.
proton number /ˈprəʊtɒn ˈnʌmbə/	Carbon has a **proton number** of 6. 6
isotope /ˈaɪsətəʊp/	Carbon-14 is an **isotope** of carbon. Carbon-14
quark /kwɑːk/	A proton is made of three quarks; each **quark** has a small charge.

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conservation of charge /ˌkɒnsəˈveɪʃn ɒv tʃɑːdʒ/	**Conservation of charge** means charge is never lost.
unified atomic mass unit /ˈjuːnɪfaɪd əˈtɒmɪk mæs ˈjuːnɪt/	A proton has a mass of about one **unified atomic mass unit**.
radioactive /ˌreɪdɪəʊˈæktɪv/	**Radioactive** material gives out radiation.
radiation /ˌreɪdɪˈeɪʃn/	**Radiation** from the source can damage cells.
ionising /ˈaɪənaɪzɪŋ/	Alpha radiation is very **ionising**. α
discrete /dɪˈskriːt/	The number of people in a room is **discrete**: it can be 3 or 4, but not 3.5. 3 4 3.5
cloud chamber /klaʊd ˈtʃeɪmbə/	We see the tracks of particles in a **cloud chamber**.
beta particle /ˈbiːtə ˈpɑːtɪkl/	A **beta particle** is a fast electron.
positron /ˈpɒzɪtrɒn/	A **positron** is like an electron with a positive charge.
antiparticle /ˌæntɪˈpɑːtɪkl/	The positron is the **antiparticle** of the electron.
continuous /kənˈtɪnjuːəs/	The beta particles have a **continuous** range of energies.
photon /ˈfəʊtɒn/	A **photon** is a small packet of light energy.
electromagnetic spectrum /ɪˌlektrəʊməgˈnetɪk ˈspektrəm/	Radio waves and X-rays are both in the **electromagnetic spectrum**. X
attenuated /əˈtenjuːeɪtɪd/	The X-rays are **attenuated** as they pass through the body. X

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gamma ray /ˈgæmə reɪ/	A **gamma ray** has no charge and no mass.
daughter nucleus /ˈdɔːtə ˈnjuːklɪəs/	The new nucleus after a decay is the **daughter nucleus**.
excited state /ekˈsaɪtɪd steɪt/	An atom in an **excited state** has extra energy.
neutrino /njuːˈtriːnəʊ/	A **neutrino** has almost no mass.
antineutrino /ˌæntɪnjuːˈtriːnəʊ/	Beta-minus decay also gives out an **antineutrino**. β
momentum /məʊˈmentəm/	A heavy truck has a lot of **momentum**.
• **fundamental particles** /ˌfʌndəˈmentl ˈpɑːtɪklz/	Quarks and electrons are **fundamental particles**.
fundamental /ˌfʌndəˈmentl/	The **fundamental** is the lowest note the string can play.
flavours /ˈfleɪvəz/	Quarks come in six **flavours**, such as up and down.
antiquark /ˈæntɪkwɑːk/	An **antiquark** has the opposite charge to its quark.
hadrons /ˈhædrɒnz/	Protons and neutrons are **hadrons**.
baryons /ˈbæriɒnz/	Protons and neutrons are **baryons**, made of three quarks.
mesons /ˈmiːzɒnz/	**Mesons** are made of a quark and an antiquark.
leptons /ˈleptɒnz/	Electrons and neutrinos are **leptons**.

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