# Particle physics

A-Level Physics · Vocabulary in context

| Word | Example |
|---|---|
| **alpha particle** /'ælfə 'pɑ:tɪkl/ | An **alpha particle** has two protons and two neutrons. |
| **deflection** /dɪ'flekʃn/ | The needle shows a large **deflection**. |
| **nucleus** /'nju:klɪəs/ | The **nucleus** is at the centre of an atom. |
| **electrostatic** /ɪˌlektrəʊ'stætɪk/ | Two charged balls push apart with an **electrostatic** force. |
| **energy** /'enədʒi/ | Food gives your body the **energy** it needs to move. |
| **proton** /'prəʊtɒn/ | A **proton** has a positive charge. |
| **neutron** /'nju:trɒn/ | A **neutron** has no charge. |
| **electron** /ɪ'lektrɒn/ | An **electron** has a negative charge. |
| **nuclide** /'nju:klaɪd/ | Carbon-14 is a **nuclide**.<br>Carbon-14 |
| **nucleon number** /'nju:klɪən 'nʌmbə/ | The **nucleon number** counts protons and neutrons. |
| **nucleon** /'nju:klɪən/ | A proton or a neutron is a **nucleon**. |
| **proton number** /'prəʊtɒn 'nʌmbə/ | Carbon has a **proton number** of 6.<br>6 |
| **isotope** /'aɪsətəʊp/ | Carbon-14 is an **isotope** of carbon.<br>Carbon-14 |
| **quark** /kwɑ:k/ | A proton is made of three quarks; each **quark** has a small charge. |



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| **conservation of charge** /ˌkɒnsə'veɪʃn ɒv tʃɑ:dʒ/ | **Conservation of charge** means charge is never lost. |
| **unified atomic mass unit** /'ju:nɪfaɪd ə'tɒmɪk mæs 'ju:nɪt/ | A proton has a mass of about one **unified atomic mass unit**. |
| **radioactive** /ˌreɪdɪəʊ'æktɪv/ | **Radioactive** material gives out radiation. |
| **radiation** /ˌreɪdɪ'eɪʃn/ | **Radiation** from the source can damage cells. |
| **ionising** /'aɪənaɪzɪŋ/ | Alpha radiation is very **ionising**.<br>$\alpha$ |
| **discrete** /dɪ'skri:t/ | The number of people in a room is **discrete**: it can be 3 or 4, but not 3.5.<br>3 4 3.5 |
| **cloud chamber** /klaʊd 'tʃeɪmbə/ | We see the tracks of particles in a **cloud chamber**. |
| **beta particle** /'bi:tə 'pɑ:tɪkl/ | A **beta particle** is a fast electron. |
| **positron** /'pɒzɪtrɒn/ | A **positron** is like an electron with a positive charge. |
| **antiparticle** /ˌæntɪ'pɑ:tɪkl/ | The positron is the **antiparticle** of the electron. |
| **continuous** /kən'tɪnju:əs/ | The beta particles have a **continuous** range of energies. |
| **photon** /'fəʊtɒn/ | A **photon** is a small packet of light energy. |
| **electromagnetic spectrum** /ɪˌlektrəʊmə'netɪk 'spektrəm/ | Radio waves and X-rays are both in the **electromagnetic spectrum**.<br>X |
| **attenuated** /ə'tenju:eɪtɪd/ | The X-rays are **attenuated** as they pass through the body.<br>X |

| Word | Example |
| --- | --- |
| **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**. $\beta$ |
| **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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