Nuclear physics

IGCSE Physics · Vocabulary in context

Word	Example
atom /ˈætəm/	An **atom** has a nucleus and electrons.
nucleus /ˈnjuːklɪəs/	The **nucleus** is at the centre of an atom.
electron /ɪˈlektrɒn/	An **electron** has a negative charge.
orbit /ˈɔːbɪt/	The Moon's **orbit** takes about 27 days.
charge /tʃɑːdʒ/	A proton has a positive **charge**.
mass /mæs/	The **mass** of this bag of rice is 5 kg.
ion /ˈaɪɒn/	An **ion** is an atom that has gained or lost electrons.
alpha particle /ˈælfə ˈpɑːtɪkl/	An **alpha particle** has two protons and two neutrons.
gold foil /gəʊld fɔɪl/	Rutherford fired alpha particles at thin **gold foil**.
scattering /ˈskætərɪŋ/	The **scattering** of alpha particles showed that atoms have a nucleus.
deflected /dɪˈflektɪd/	A few alpha particles were **deflected** back by the gold foil.
nucleon /ˈnjuːklɪən/	A proton or a neutron is a **nucleon**.
proton /ˈprəʊtɒn/	A **proton** has a positive charge.
relative /ˈrelətɪv/	The **relative** mass of a proton is 1.

exercises.lol exercises.com.cn

Word	Example
neutron /ˈnjuːtrɒn/	A **neutron** has no charge.
proton number /ˈprəʊtɒn ˈnʌmbə/	Carbon has a **proton number** of 6.
nucleon number /ˈnjuːklɪən ˈnʌmbə/	The **nucleon number** counts protons and neutrons.
nuclide /ˈnjuːklaɪd/	Carbon-14 is a **nuclide**.
isotope /ˈaɪsətəʊp/	Carbon-14 is an **isotope** of carbon.
nuclear fission /ˈnjuːklɪə ˈfɪʃn/	**Nuclear fission** splits a big nucleus into two.
energy /ˈenədʒi/	Food gives your body the **energy** it needs to move.
nuclear fusion /ˈnjuːklɪə ˈfjuːʒn/	**Nuclear fusion** powers the Sun.
hydrogen /ˈhaɪdrədʒn/	Water contains **hydrogen** and oxygen.
helium /ˈhiːlɪəm/	An alpha particle is a **helium** nucleus.
unstable /ʌnˈsteɪbl/	An **unstable** nucleus gives out radiation.
radiation /ˌreɪdiˈeɪʃn/	**Radiation** from the source can damage cells.
radioactive /ˌreɪdɪəʊˈæktɪv/	**Radioactive** material gives out radiation.
decay /dɪˈkeɪ/	Uranium nuclei **decay** slowly.
spontaneous /spɒnˈteɪnɪəs/	Decay is **spontaneous**: nothing outside makes it happen.

Word	Example
random /ˈrændəm/	Decay is **random**: we cannot say which nucleus decays next.
background radiation /ˈbækgraʊnd ˌreɪdɪˈeɪʃn/	**Background radiation** comes from rocks and space.
radon /ˈreɪdɒn/	**Radon** is a radioactive gas that can collect in basements.
cosmic rays /ˈkɒzmɪk reɪz/	**Cosmic rays** come from space.
detector /dɪˈtektə/	A Geiger–Müller tube is a radiation **detector**. -
counter /ˈkaʊntə/	The **counter** goes up by 1 each time. 1
count rate /kaʊnt reɪt/	The **count rate** is 120 counts per minute. 120
corrected /kəˈrektɪd/	Subtract the background to get the **corrected** count.
ionising /ˈaɪənaɪzɪŋ/	Alpha radiation is very **ionising**. α
aluminium /ˌæljʊˈmɪnɪəm/	**Aluminium** is light and does not rust.
electromagnetic wave /ɪˌlektrəʊməgˈnetɪk weɪv/	Light is an **electromagnetic wave**.
lead /liːd/	**Lead** forms at the cathode when molten lead bromide is electrolysed.
penetrating /ˈpenɪtreɪtɪŋ/	Gamma rays are very **penetrating**.
absorbed /əbˈsɔːbd/	Alpha particles are **absorbed** by paper.

exercises.lol exercises.com.cn

Word	Example
beta particle /ˈbiːtə ˈpɑːtɪkl/	A **beta particle** is a fast electron.
gamma radiation /ˈgæmə ˌreɪdɪˈeɪʃn/	**Gamma radiation** needs thick lead to stop it.
kinetic energy /kɪˈnetɪk ˈenədʒi/	A fast car has a lot of **kinetic energy**.
electric field /ɪˈlektrɪk fiːld/	A charged ball has an **electric field** around it.
magnetic field /mægˈnetɪk fiːld/	A magnet has a **magnetic field** around it.
stable /ˈsteɪbl/	A **stable** sort keeps equal items in the same order.
sample /ˈsæmpl/	Hold the **sample** close to the detector.
half-life /hɑːf laɪf/	After one **half-life**, half the nuclei have decayed.
smoke alarm /sməʊk əˈlɑːm/	A **smoke alarm** uses a tiny alpha source. α
bacteria /bækˈtɪərɪə/	Chlorine kills **bacteria** in drinking water.
sterilise /ˈsterəlaɪz/	Chlorine is used to **sterilise** water by killing germs.
medical tracer /ˈmedɪkl ˈtreɪsə/	A **medical tracer** shows how blood moves in the body.
cancer /ˈkænsə/	Smoking can cause **cancer**.
living cells /ˈlɪvɪŋ selz/	Radiation can damage **living cells**.
mutation /mjuːˈteɪʃn/	A **mutation** is a change in the DNA. DNA

Word	Example
dose /dəʊs/	Workers wear badges to measure their radiation **dose**.
exposure /ɪkˈspəʊʒə/	Keep your **exposure** to radiation short.
shielding /ˈʃiːldɪŋ/	Lead **shielding** protects staff from gamma rays.
radioactive waste	**Radioactive waste** from hospitals and power stations must be disposed of safely.

exercises.lol exercises.com.cn