Quantum physics

A-Level Physics · Vocabulary in context

Word	Example
photon /ˈfəʊtɒn/	A **photon** is a small packet of light energy.
quanta /ˈkwɒntə/	Light energy comes in small packets called **quanta**.
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
particulate nature /pəˈtɪkjʊleɪt ˈneɪtʃə/	The photoelectric effect shows the **particulate nature** of light.
frequency /ˈfriːkwənsi/	A **frequency** of 50 Hz means 50 waves every second. 50 Hz 50
Planck constant /plæŋk ˈkɒnstənt/	h is the **Planck constant**. h
wavelength /ˈweɪvleŋθ/	The **wavelength** is the distance from one crest to the next.
electronvolt /ɪˈlektrɒnvəʊlt/	One **electronvolt** is a very small amount of energy.
kinetic energy /kɪˈnetɪk ˈenədʒi/	A fast car has a lot of **kinetic energy**.
electron /ɪˈlektrɒn/	An **electron** has a negative charge.
potential difference /pəˈtenʃl ˈdɪfrəns/	The **potential difference** across the lamp is 6 V. 6 V
work function /wɜːk ˈfʌŋkʃn/	A metal's **work function** is the energy needed to free an electron.
energy level /ˈenədʒi ˈlevl/	The electron jumps to a higher **energy level**.

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momentum /məʊˈmentəm/	A heavy truck has a lot of **momentum**.
Radiation pressure /ˌreɪdɪˈeɪʃn ˈpreʃə/	**Radiation pressure** from sunlight can push a light sail.
photoelectric effect /ˌfəʊtəʊɪˈlektrɪk ɪˈfekt/	In the **photoelectric effect**, light knocks electrons out of a metal.
photoelectron /ˌfəʊtəʊɪˈlektrɒn/	A **photoelectron** leaves the metal surface.
threshold frequency /ˈθreʃəʊld ˈfriːkwənsi/	Below the **threshold frequency**, no electrons come out.
threshold wavelength /ˈθreʃəʊld ˈweɪvleŋθ/	Light longer than the **threshold wavelength** frees no electrons.
stopping potential /ˈstɒpɪŋ pəˈtenʃl/	The **stopping potential** stops even the fastest electrons.
wave–particle duality /weɪv ˈpɑːtɪkl djuːˈælɪti/	**Wave–particle duality** means light acts as a wave and as a particle.
interference /ˌɪntəˈfɪərəns/	**Interference** makes loud and quiet places in a room.
diffraction grating /dɪˈfrækʃn ˈgreɪtɪŋ/	A **diffraction grating** splits white light into colours.
diffraction /dɪˈfrækʃn/	**Diffraction** lets you hear sound around a corner.
electron diffraction /ɪˈlektrɒn dɪˈfrækʃn/	**Electron diffraction** shows that electrons act as waves.
de Broglie wavelength /də ˈbrəʊli ˈweɪvleŋθ/	A fast electron has a short **de Broglie wavelength**.

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crystal lattice /ˈkrɪstl ˈlætɪs/	The atoms sit in a regular **crystal lattice**.
polycrystalline /ˌpɒlɪˈkrɪstəlaɪn/	**Polycrystalline** graphite has many small crystals.
ground state /graʊnd steɪt/	The **ground state** is the lowest energy level.
excited state /ekˈsaɪtɪd steɪt/	An atom in an **excited state** has extra energy.
transition /trænˈsɪʃn/	A **transition** to a lower level gives out a photon.
emission spectrum /ɪˈmɪʃn ˈspektrəm/	A hot gas gives a bright-line **emission spectrum**.
absorption spectrum /əbˈsɔːpʃn ˈspektrəm/	An **absorption spectrum** has dark lines.
annihilate /əˈnaɪəleɪt/	An electron and a positron **annihilate** each other.

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