

Episode 500: Preparation for the quantum physics topic

It is most likely that this will be a topic that is completely unfamiliar to all students from pre-16 level courses. It is also one where the impact on everyday life is *apparently* very limited and where students think that they have no direct experience of its consequences. Nothing could be further from the truth: e.g. all modern electronics relies on quantum physics.

However these very facts make it a most fascinating subject and one whose very novelty should attract the interest of your students.

Episode 501: Spectra and energy levels

Episode 502: The photoelectric effect

Main aims

Students will:

1. Know that atoms absorb and emit light as quanta (photons).
2. Explain how this is used to explain emission spectra.
3. Know how to calculate photon energies.
4. Describe the photoelectric effect, and explain it in terms of photons and electrons.
5. Describe an experiment to determine Planck's constant using the photoelectric effect.

Prior knowledge

Students should be familiar with the nuclear model of the atom. They should know that metals contain 'free' (conduction) electrons.

Where this leads

These episodes (and work on lasers) lead on to general ideas about wave-particle duality.