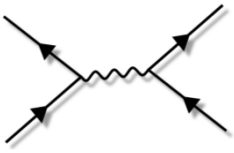

A Level Physics Online

Edexcel Physics – 9PH0

Module 8: Nuclear and Particle Physics

You should be able to demonstrate and show your understanding of:	Progress and understanding:			
	1	2	3	4
Nuclear and Particle Physics				
What is meant by **nucleon number** (mass number) and **proton number** (atomic number)				
How **large-angle alpha particle scattering** gives evidence for a nuclear model of the atom and how our understanding of atomic structure has changed over time				
Electrons and how they are released in the process of **thermionic emission** and how they can be accelerated by electric and magnetic fields				
The role of electric and magnetic fields in particle accelerators (**linac and cyclotron**) and detectors (general principles of ionisation and deflection only)				
The equation: $$r = \frac{p}{BQ}$$ for a charge particle in a magnetic field				
The conservation of charge, energy and momentum to interactions between particles and interpret particle tracks				
Why high energies are required to investigate the structure of nucleons				
The equation: $$\Delta E = c^2 \Delta m$$ In situations involved the **creation and annihilation** of matter / antimatter				
The use of MeV and GeV (energy) and MeV/c^2, GeV/c^2 (mass) and convert between these and SI units				
Situations in which the relativistic increase in particle lifetime is significant *(use of relativistic equations not required)*				

You should be able to demonstrate and show your understanding of:	Progress and understanding:			
	1	2	3	4
The **standard quark-lepton model** particles can be classified as: ● **baryons** (e.g. neutrons and protons) which are made from three quarks ● **mesons** (e.g. pions) which are made from a quark and an antiquark ● **leptons** (e.g. electrons and neutrinos) which are fundamental particles ● **photons** and that the symmetry of the model predicted the top quark				
Every particle has a **corresponding antiparticle** and be able to use the properties of a particle to deduce the properties of its antiparticle and vice versa				
How to use laws of conservation of **charge, baryon number and lepton number** to determine whether a particle interaction is possible				
Particle equations, given the relevant particle symbols as well as how to interpret and write / balance them.				