

Particles - Decays

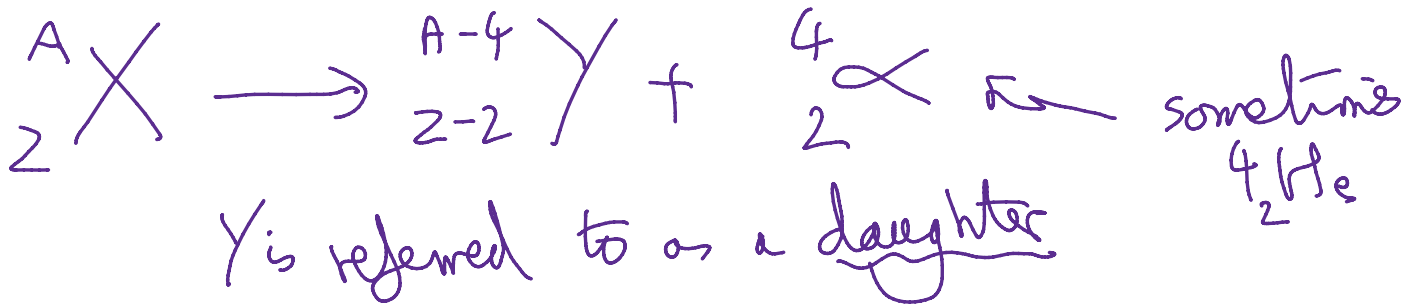
17 January 2020 10:43

In our house there are often unstable piles created. These have a habit of falling over - and its impossible to predict when this is going to happen. The same can be true of nuclei - some isotopes can be unstable. You cannot predict when a nucleus will decay (fall over) but the aim of the nucleus is that it 'wants' to become more stable (so to carry the analogy onwards) its a bit like taking something off the top of the unstable pile, meaning its more stable... but enough of dangerous analogies.

There are several types of radiation which you'll have met at GCSE

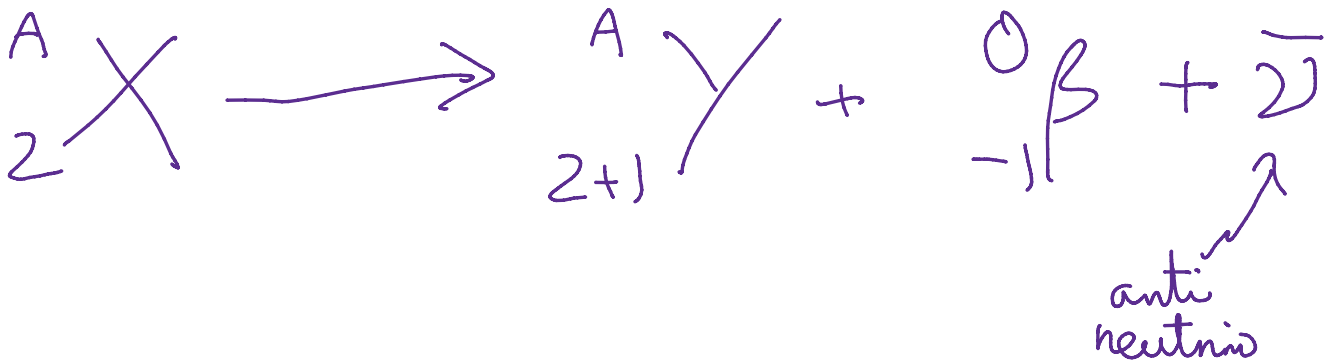
Alpha

A nucleus emits 2p and 2n in a little lump. It is therefore a helium nucleus, having mass 4 and charge +2.



Beta

A fast moving electron is emitted. Considering the energy it became clear that something else must be coming off too - an antineutrino (no charge, and no mass - though last I heard this no mass for a neutrino was still up for debate). Anyway, a neutron in the nucleus turns into a proton and an electron, which leaves.



Gamma γ

This is simply the release of a photon - so the Z and A numbers remain the same. Often emitted after and alpha or a beta