Why is it that only alpha particles are emitted by radioactive nuclei, while protons and neutron are not?

Answer:

Although alpha (beta, gamma) radiations were found most commonly, other types of decay were eventually discovered. For example, neutron and proton emission.

Neutron emission is a type of radioactive decay of atoms containing excess neutrons, in which a neutron is simply ejected from the nucleus. Two examples of isotopes which emit neutrons are beryllium-13 (mean life 2.7×10^{-21} sec) and helium-5 (7×10^{-22} sec).

Proton emission (also known as proton radioactivity) is a type of radioactive decay in which a proton is ejected from a nucleus. Proton emission can occur from high-lying excited states in a nucleus following a beta decay, in which case the process is known as beta-delayed proton emission, or can occur from the ground state (or a low-lying isomer) of very proton-rich nuclei, in which case the process is very similar to alpha decay.