

Question: in beta decay, atomic number increases by one unit, mass number decreases by one unit, what happens to electron number in the atomic orbitals? (as the electron formed is emitted)

Answer:

Beta particles are electrons or positrons (electrons with positive electric charge, or antielectrons). Beta decay occurs when, in a nucleus with too many protons or too many neutrons, one of the protons or neutrons is transformed into the other. There are two types of beta decay, a decay that is mediated by the weak force: beta minus and beta plus. In the case of beta decay that produces an electron emission, it is referred to as beta minus (β^-), while in the case of a positron emission as beta plus (β^+). During beta minus decay a neutron converts to an electron and a proton, and the electron is repulsed. Therefore, mass number does not change (that's just the number of protons + neutrons) but the atomic number increases by one (since there's now one more proton than before). In an atom of neutral charge, the atomic number is also equal to the number of electrons in the atomic orbitals, so number of electrons increases by one.