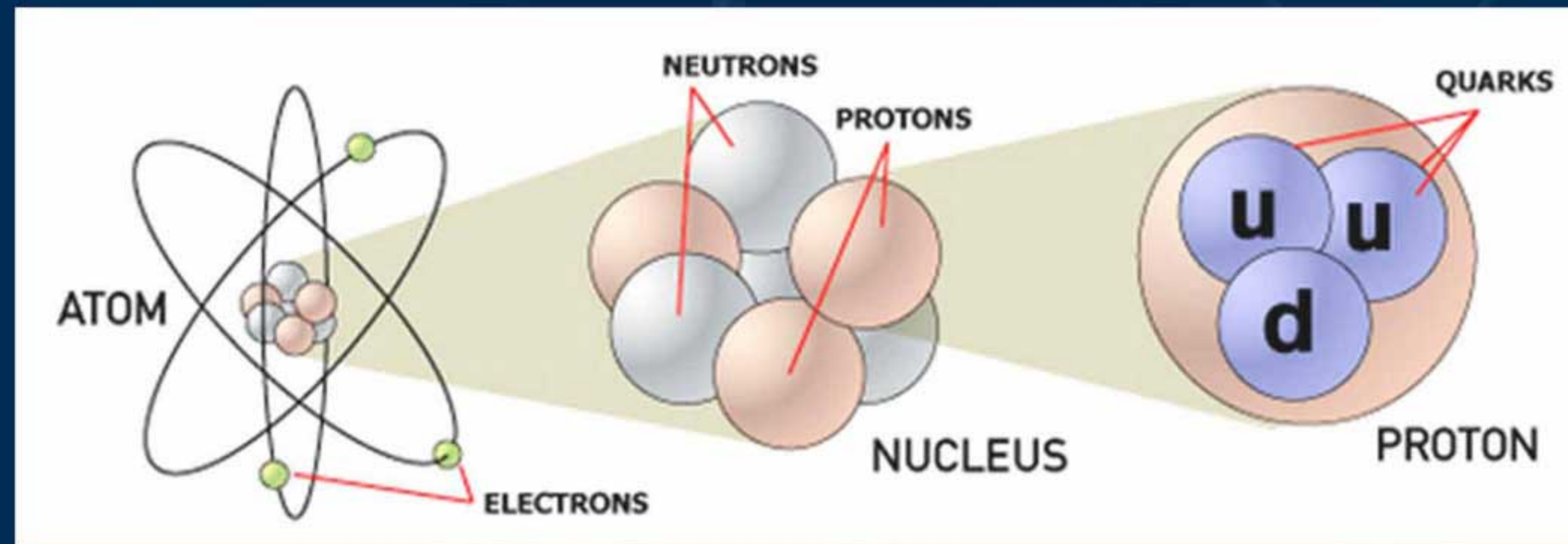


# The Standard Model: Beyond the Atom



The 'Standard Model' is the theory that describes the smallest experimentally observed particles of matter & the interactions between them.

Matter is composed of quarks & leptons. In fact, all ordinary matter is built from only 'up quarks', 'down quarks' & 'electrons'.

Particles interact with one another by exchanging force-carrying particles. These mediate the electromagnetic force ( $\gamma$ ), the strong nuclear force ( $g$ ) & the weak nuclear force ( $Z$  &  $W$ ).

The Higgs Boson ( $H$ ) is needed, since without it, all the other particles would have zero mass, which would be inconsistent with measurements.

*The Standard Model doesn't include gravity, nor can it explain what the 'dark matter' & 'dark energy', that make up most of the mass of the Universe, might be. So although it is a very successful theory, it is not the final answer!*

## Elementary Particles in the Standard Model

