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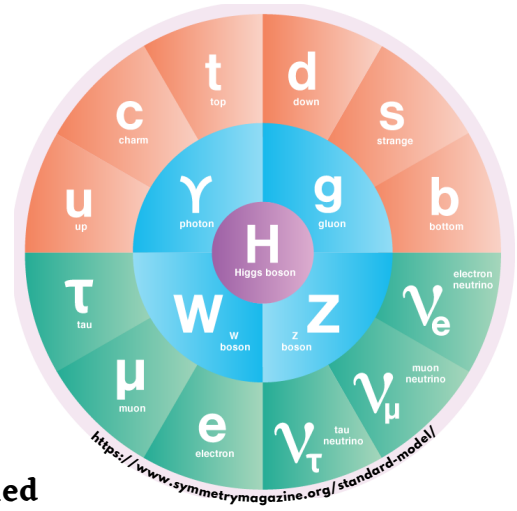
THE STANDARD MODEL

All about the smallest particles in our universe and the forces that act on them...

THE SEARCH OF THE FUNDAMENTAL BUILDING BLOCKS OF MATTER STARTED IN THE ANCIENT GREEK AND CONTINUES TO THIS DAY

THE ELEMENTARY PARTICLES

- **Cannot be split into other particles**
- **Have no internal structure**
- **Their properties can be studied through their trajectories and mutual collisions**



They are dived into two groups:

FERMIONS

with its own anti-particles

QUARKS

the building blocks of protons and neutrons

LEPTONS

interact with the weak and electromagnetic forces, They are diveded into 3 generations

BOSONS

are force-carrier particles and convey the three forces of nature

GAUGE BOSONS

responsible for carrying the fundamental interactions

HIGGS BOSONS

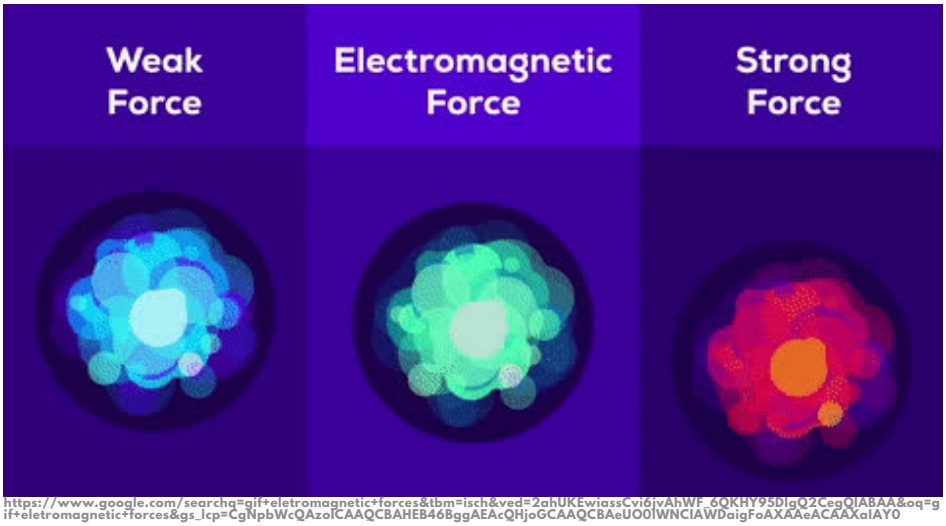
responsible for the mass of most fundamental particles

THE NATURAL FORCES

TO DATE WE DISCOVER DIFFERENT NATURAL FORCES:

- the strong nuclear force
- the weak nuclear force
- the electromagnetic force

These interactions are responsible for the structure and evolution of the Universe.



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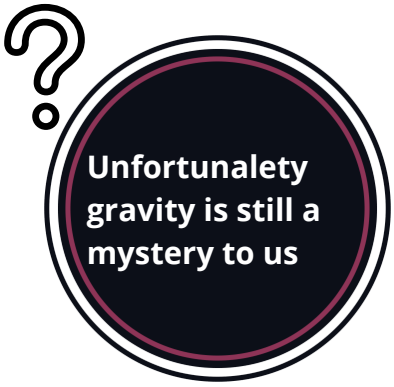

The strong nuclear force keeps the atomic nuclei together and thus ensures stability.
It is the force that holds quarks together to form protons and neutrons.

The weak force is only effective at very short distances. It governs all matter and is the mechanism of interaction between subatomic particles. It involves an exchange of force carries particles, whose aim is to convey forces between other particles.

Electromagnetism is the force that acts between electrically charged particles. It is responsible for the repulsion between the superficial atoms. It's the only force with an infinite range of action.