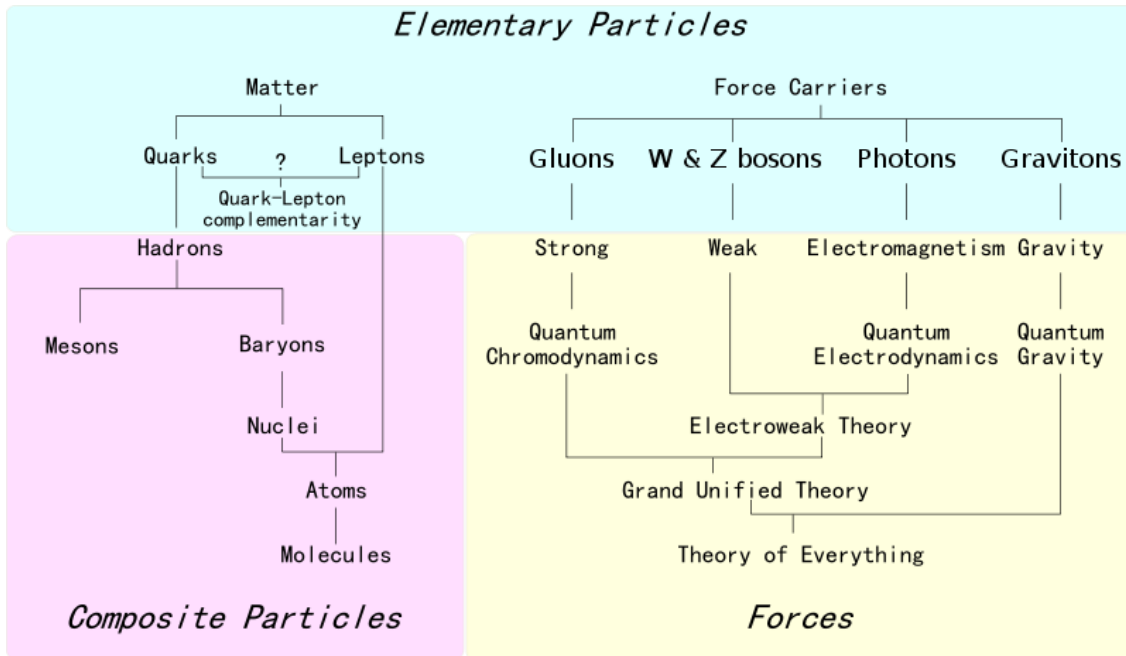


According to the Standard Model, all elementary particles are either bosons or fermions (depending on their spin). The spin-statistics theorem identifies the resulting quantum statistics that differentiates fermions from bosons. According to this methodology: Particles normally associated with matter are fermions. They have half-integer spin and are divided into twelve flavours. Particles associated with fundamental forces are bosons and they have integer spin.



**Elementary fermions (matter particles):**

- Quarks:
  - up, down, charm, strange, top, bottom
- Leptons:
  - o electron, electron neutrino, muon, muon neutrino, tau, tau neutrino

**Elementary bosons (force-carrying particles):**

- Gauge bosons:
  - o gluon, W and Z bosons, photon

**Other bosons**

- Higgs boson

Of these, only the Higgs boson remains undiscovered, but efforts are being taken at the Large Hadron Collider to determine whether it exists or not. Additional elementary particles may exist, such as the graviton, which would mediate gravitation. Such particles lie beyond the Standard Model.