

Standard Model of Elementary Particles

three generations of matter
(fermions)

interactions / force carriers
(bosons)

I

II

III

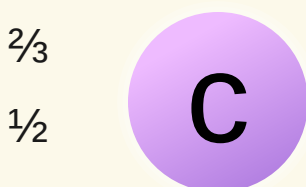
mass
charge
spin

$\simeq 2.2 \text{ MeV}/c^2$



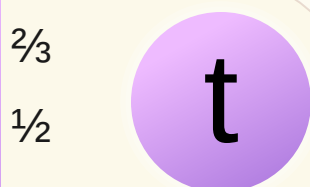
up

$\simeq 1.28 \text{ GeV}/c^2$



charm

$\simeq 173.1 \text{ GeV}/c^2$



top

0



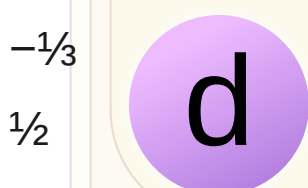
gluon

$\simeq 124.97 \text{ GeV}/c^2$



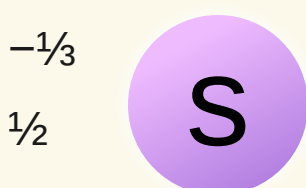
higgs

$\simeq 4.7 \text{ MeV}/c^2$



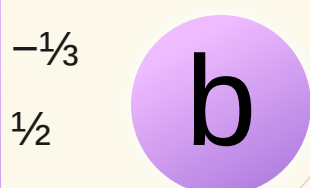
down

$\simeq 96 \text{ MeV}/c^2$



strange

$\simeq 4.18 \text{ GeV}/c^2$



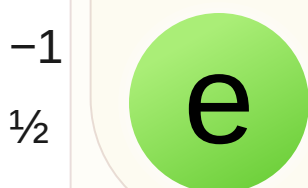
bottom

0



photon

$\simeq 0.511 \text{ MeV}/c^2$



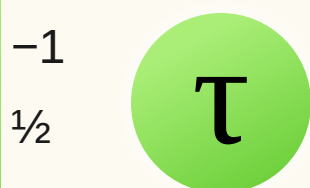
electron

$\simeq 105.66 \text{ MeV}/c^2$



muon

$\simeq 1.7768 \text{ GeV}/c^2$



tau

$\simeq 91.19 \text{ GeV}/c^2$



Z boson

$< 1.0 \text{ eV}/c^2$



electron
neutrino

$< 0.17 \text{ MeV}/c^2$



muon
neutrino

$< 18.2 \text{ MeV}/c^2$



tau
neutrino

$\simeq 80.39 \text{ GeV}/c^2$



W boson

QUARKS

LEPTONS

GAUGE BOSONS
VECTOR BOSONS

SCALAR BOSONS