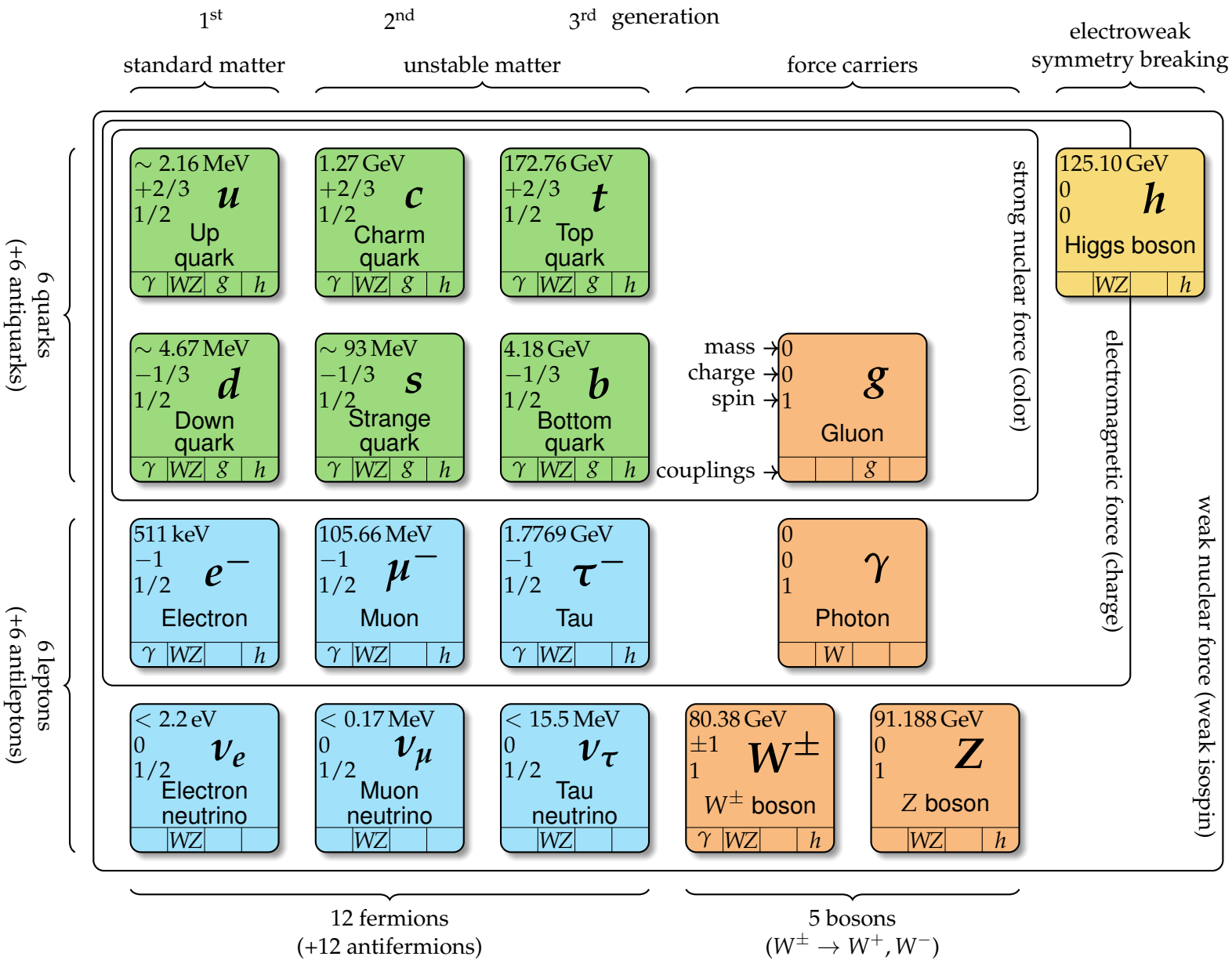
1st
2nd
3rd generation
standard matter
unstable matter
force carriers
electroweak symmetry breaking
~ 2.16 MeV
+2/3
1/2
u
Up quark
1.27 GeV
+2/3
1/2
c
Charm quark
172.76 GeV
+2/3
1/2
t
Top quark
125.10 GeV
0
0
h
Higgs boson
~ 4.67 MeV
−1/3
1/2
d
Down quark
~ 93 MeV
−1/3
1/2
s
Strange quark
4.18 GeV
−1/3
1/2
b
Bottom quark
mass → 0
charge → 0
spin → 1
g
Gluon
couplings →
511 keV
−1
1/2
e−
Electron
105.66 MeV
−1
1/2
μ−
Muon
1.7769 GeV
−1
1/2
τ−
Tau
0
0
1
γ
Photon
< 2.2 eV
0
1/2
νe
Electron neutrino
< 0.17 MeV
0
1/2
νμ
Muon neutrino
< 15.5 MeV
0
1/2
ντ
Tau neutrino
80.38 GeV
±1
1
W±
W± boson
91.188 GeV
0
1
Z
Z boson
γ WZ g h
WZ h
W
6 quarks (+6 antiquarks)
6 leptons (+6 antileptons)
strong nuclear force (color)
electromagnetic force (charge)
weak nuclear force (weak isospin)
12 fermions (+12 antifermions)
5 bosons (W± → W+, W−)