

# Appendix G

## The Standard Model of Particle Physics

### G.0.7 The Weak Force

The gauge group of the weak force is  $SU(2)$ . The gauge bosons which mediate the weak force are denoted  $W^+$ ,  $W^-$ , and  $Z$ . As the range of the weak force is short, these gauge bosons are massive.

### G.0.8 The Strong Force

The gauge group of the strong force is  $SU(3)$ . The gauge bosons which mediate this force are called gluons.

### G.0.9 Leptons

Leptons interact via the electromagnetic and weak interaction, but do not participate in the strong interaction.

### G.0.10 Higgs Field

In the standard model of particle physics the masses of all the particles are zero. An extra field, the so-called Higgs field, is inserted by hand to give the particles mass.