The Standard Model

<u>Matter Particles</u> (Fermions)   Spin = 1/2

Leptons: Quarks:

$$\begin{pmatrix} \nu_e \\ e \end{pmatrix} \quad \begin{pmatrix} \nu_\mu \\ \mu \end{pmatrix} \quad \begin{pmatrix} \nu_\tau \\ \tau \end{pmatrix} \qquad \begin{pmatrix} u \\ d \end{pmatrix} \quad \begin{pmatrix} c \\ s \end{pmatrix} \quad \begin{pmatrix} t \\ b \end{pmatrix}$$

<u>Interactions</u> "Force carriers" (Bosons)   Spin = 1

Gauge bosons:

$$\gamma \qquad W \qquad Z \qquad g$$

Beautiful (complicated) mathematics governs nature interactions
Dictated by principles of symmetry *(Much direct consequence QM + R)*