

# QUARKS

# LEPTONS

1<sup>st</sup>

2<sup>nd</sup>

3<sup>rd</sup>

2.2 M  
 $u^{+2/3}_{1/2}$   
up

1.28 G  
 $c^{+2/3}_{1/2}$   
charm

173.1 G  
 $t^{+2/3}_{1/2}$   
top

4.7 M  
 $d^{-1/3}_{1/2}$   
down

96 M  
 $s^{-1/3}_{1/2}$   
strange

4.18 G  
 $b^{-1/3}_{1/2}$   
bottom

0.51 M  
 $e^{-1}_{1/2}$   
electron

105.66 M  
 $\mu^{-1}_{1/2}$   
muon

1.78 G  
 $\tau^{-1}_{1/2}$   
tau

< 2  
 $\nu_e^0_{1/2}$   
 $\nu_e$  neutrino

< 0.19 M  
 $\nu_\mu^0_{1/2}$   
 $\nu_\mu$  neutrino

< 18.2 M  
 $\nu_\tau^0_{1/2}$   
 $\nu_\tau$  neutrino

Mass:  $\text{eV}/c^2$   
Charge  
Spin  
Name

0  
 $g^0_1$   
gluon

0  
 $\gamma^0_1$   
photon

80.38 G  
 $W^{-1}_1$   
W boson

91.19 G  
 $Z^0_1$   
Z boson

125.09 G  
 $H^0_0$   
higgs

strong nuclear interaction

electromagnetic interaction

weak nuclear interaction

FERMIONS

BOSONS