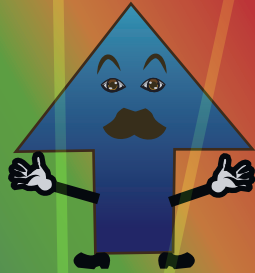


Pion (π^+) (12 Points)

Up Quark

Electric Charge: $+\frac{2}{3}$
Spin: $\frac{1}{2}$
Mass: 2.3 MeV
Half Life: Stable

Colour Charge: Yes
Baryon Number: $\frac{1}{3}$
1st generation (1 point)

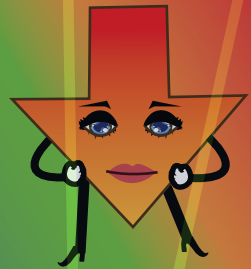


Pion (π^-) (12 Points)

Down Quark

Electric Charge: $-\frac{1}{3}$
Spin: $\frac{1}{2}$
Mass: 4.8 MeV
Half Life: Stable

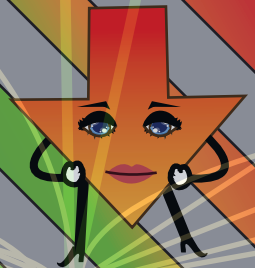
Colour Charge: Yes
Baryon Number: $\frac{1}{3}$
1st generation (1 point)



Anti-Down Quark

Electric Charge: $+\frac{1}{3}$
Spin: $\frac{1}{2}$
Mass: 4.8 MeV
Half Life: Stable

Colour Charge: Yes
Baryon Number: $-\frac{1}{3}$
1st generation (1 point)



Anti-Up Quark

Electric Charge: $-\frac{2}{3}$
Spin: $\frac{1}{2}$
Mass: 2.3 MeV
Half Life: Stable

Colour Charge: Yes
Baryon Number: $-\frac{1}{3}$
1st generation (1 point)



Electric Charge: $+1$
Spin: 0
Mass: 139.6 MeV
Half Life: 2.6×10^{-8} sec

Pions are the lightest mesons. Charged pions were proposed theoretically in 1935 but were not discovered until 1947.

Virtual pions are exchanged between protons and neutrons as carriers of the (residual) strong force.

Electric Charge: -1
Spin: 0
Mass: 139.6 MeV
Half Life: 2.6×10^{-8} sec

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