

Quark Cards  
 $-2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

$\bar{u}$

anti-up

Quark Cards  
 $-2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

Quark Cards  
 $-2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

$\bar{u}$

anti-up

Quark Cards  
 $-2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

Quark Cards  
 $-2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

$\bar{u}$

anti-up

Quark Cards  
 $-2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

Quark Cards  
 $+1/3$   
 $\approx 4.7 \text{ MeV}/c^2$

$\bar{d}$

anti-down

Quark Cards  
 $+1/3$   
 $\approx 4.7 \text{ MeV}/c^2$

Quark Cards  
 $+2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

$u$

up

Quark Cards  
 $+2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

Quark Cards  
 $+2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

$u$

up

Quark Cards  
 $+2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

Quark Cards  
 $+2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

$u$

up

Quark Cards  
 $+2/3$   
 $\approx 2.2 \text{ MeV}/c^2$

Quark Cards  
 $-1/3$   
 $\approx 4.7 \text{ MeV}/c^2$

$d$

down

Quark Cards  
 $-1/3$   
 $\approx 4.7 \text{ MeV}/c^2$



Quark Cards  
 $+1/3$   
 $\approx 4.7 \text{ MeV}/c^2$

$\bar{d}$

anti-down

Quark Cards  
 $+1/3$   
 $\approx 4.7 \text{ MeV}/c^2$

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Quark Cards  
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$d$

down

Quark Cards  
 $-1/3$   
 $\approx 4.7 \text{ MeV}/c^2$

Quark Cards  
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$d$

down

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 $-1/3$   
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Quark Cards  
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$u$

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+1/3  
 $\approx 4.7 \text{ MeV}/c^2$

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$\bar{d}$

anti-down

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+1/3  
 $\approx 4.7 \text{ MeV}/c^2$

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$\bar{d}$

anti-down

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+1/3  
 $\approx 4.7 \text{ MeV}/c^2$

Quark Cards  
+2/3  
 $\approx 2.2 \text{ MeV}/c^2$

$u$

up

Quark Cards  
+2/3  
 $\approx 2.2 \text{ MeV}/c^2$

Quark Cards  
-1/3  
 $\approx 4.7 \text{ MeV}/c^2$

$d$

down

Quark Cards  
-1/3  
 $\approx 4.7 \text{ MeV}/c^2$

Quark Cards  
-1/3  
 $\approx 4.7 \text{ MeV}/c^2$

$d$

down

Quark Cards  
-1/3  
 $\approx 4.7 \text{ MeV}/c^2$

Quark Cards  
-1/3  
 $\approx 4.7 \text{ MeV}/c^2$

$d$

down

Quark Cards  
-1/3  
 $\approx 4.7 \text{ MeV}/c^2$



Quark Cards  
-2/3  
 $\approx 1.28 \text{ GeV}/c^2$

$\bar{c}$

anti-charm

Quark Cards  
-2/3  
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards  
-2/3  
 $\approx 1.28 \text{ GeV}/c^2$

$\bar{c}$

anti-charm

Quark Cards  
-2/3  
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards  
-2/3  
 $\approx 1.28 \text{ GeV}/c^2$

$\bar{c}$

anti-charm

Quark Cards  
-2/3  
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards  
+1/3  
 $\approx 96 \text{ MeV}/c^2$

$\bar{s}$

anti-strange

Quark Cards  
+1/3  
 $\approx 96 \text{ MeV}/c^2$

Quark Cards  
+2/3  
 $\approx 1.28 \text{ GeV}/c^2$

C

charm

Quark Cards  
+2/3  
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards  
+2/3  
 $\approx 1.28 \text{ GeV}/c^2$

C

charm

Quark Cards  
+2/3  
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards  
+2/3  
 $\approx 1.28 \text{ GeV}/c^2$

C

charm

Quark Cards  
+2/3  
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards  
-1/3  
 $\approx 96 \text{ MeV}/c^2$

S

strange

Quark Cards  
-1/3  
 $\approx 96 \text{ MeV}/c^2$





Quark Cards

$+1/3$   
 $\approx 96 \text{ MeV}/c^2$

$\bar{s}$

anti-strange

Quark Cards

$+1/3$   
 $\approx 96 \text{ MeV}/c^2$

Quark Cards

$+1/3$   
 $\approx 96 \text{ MeV}/c^2$

$\bar{s}$

anti-strange

Quark Cards

$+1/3$   
 $\approx 96 \text{ MeV}/c^2$

Quark Cards

$-2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

$\bar{c}$

anti-charm

Quark Cards

$-2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards

$-2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

$\bar{c}$

anti-charm

Quark Cards

$-2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards

$-1/3$   
 $\approx 96 \text{ MeV}/c^2$

$s$

strange

Quark Cards

$-1/3$   
 $\approx 96 \text{ MeV}/c^2$

Quark Cards

$-1/3$   
 $\approx 96 \text{ MeV}/c^2$

$s$

strange

Quark Cards

$-1/3$   
 $\approx 96 \text{ MeV}/c^2$

Quark Cards

$+2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

$c$

charm

Quark Cards

$+2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards

$+2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

$c$

charm

Quark Cards

$+2/3$   
 $\approx 1.28 \text{ GeV}/c^2$



Quark Cards

$-2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

**$\bar{c}$**

anti-charm

Quark Cards

$-2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards

$+1/3$   
 $\approx 96 \text{ MeV}/c^2$

**$\bar{s}$**

anti-strange

Quark Cards

$+1/3$   
 $\approx 96 \text{ MeV}/c^2$

Quark Cards

$+1/3$   
 $\approx 96 \text{ MeV}/c^2$

**$\bar{s}$**

anti-strange

Quark Cards

$+1/3$   
 $\approx 96 \text{ MeV}/c^2$

Quark Cards

$+1/3$   
 $\approx 96 \text{ MeV}/c^2$

**$\bar{s}$**

anti-strange

Quark Cards

$+1/3$   
 $\approx 96 \text{ MeV}/c^2$

Quark Cards

$+2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

**C**

charm

Quark Cards

$+2/3$   
 $\approx 1.28 \text{ GeV}/c^2$

Quark Cards

$-1/3$   
 $\approx 96 \text{ MeV}/c^2$

**S**

strange

Quark Cards

$-1/3$   
 $\approx 96 \text{ MeV}/c^2$

Quark Cards

$-1/3$   
 $\approx 96 \text{ MeV}/c^2$

**S**

strange

Quark Cards

$-1/3$   
 $\approx 96 \text{ MeV}/c^2$

Quark Cards

$-1/3$   
 $\approx 96 \text{ MeV}/c^2$

**S**

strange

Quark Cards

$-1/3$   
 $\approx 96 \text{ MeV}/c^2$



Quark Cards  
 $-2/3$   
 $\approx 173.1 \text{ GeV}/c^2$



anti-top

Quark Cards  
 $-2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
 $-2/3$   
 $\approx 173.1 \text{ GeV}/c^2$



anti-top

Quark Cards  
 $-2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
 $-2/3$   
 $\approx 173.1 \text{ GeV}/c^2$



anti-top

Quark Cards  
 $-2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
 $+1/3$   
 $\approx 4.18 \text{ GeV}/c^2$



anti-bottom

Quark Cards  
 $+1/3$   
 $\approx 4.18 \text{ GeV}/c^2$

Quark Cards  
 $+2/3$   
 $\approx 173.1 \text{ GeV}/c^2$



top

Quark Cards  
 $+2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
 $+2/3$   
 $\approx 173.1 \text{ GeV}/c^2$



top

Quark Cards  
 $+2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
 $+2/3$   
 $\approx 173.1 \text{ GeV}/c^2$



top

Quark Cards  
 $+2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
 $-1/3$   
 $\approx 4.18 \text{ GeV}/c^2$



bottom

Quark Cards  
 $-1/3$   
 $\approx 4.18 \text{ GeV}/c^2$



Quark Cards  
 $+1/3$   
 $\approx 4.18 \text{ GeV}/c^2$

**$\bar{b}$**

anti-bottom

Quark Cards  
 $+1/3$   
 $\approx 4.18 \text{ GeV}/c^2$

Quark Cards  
 $+1/3$   
 $\approx 4.18 \text{ GeV}/c^2$

**$\bar{b}$**

anti-bottom

Quark Cards  
 $+1/3$   
 $\approx 4.18 \text{ GeV}/c^2$

Quark Cards  
 $-2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

**$\bar{t}$**

anti-top

Quark Cards  
 $-2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
 $-2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

**$\bar{t}$**

anti-top

Quark Cards  
 $-2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
 $-1/3$   
 $\approx 4.18 \text{ GeV}/c^2$

**b**

bottom

Quark Cards  
 $-1/3$   
 $\approx 4.18 \text{ GeV}/c^2$

Quark Cards  
 $-1/3$   
 $\approx 4.18 \text{ GeV}/c^2$

**b**

bottom

Quark Cards  
 $-1/3$   
 $\approx 4.18 \text{ GeV}/c^2$

Quark Cards  
 $+2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

**t**

top

Quark Cards  
 $+2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
 $+2/3$   
 $\approx 173.1 \text{ GeV}/c^2$

**t**

top

Quark Cards  
 $+2/3$   
 $\approx 173.1 \text{ GeV}/c^2$





Quark Cards  
-2/3  
 $\approx 173.1 \text{ GeV}/c^2$

**$\bar{t}$**

anti-top

Quark Cards  
-2/3  
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
+1/3  
 $\approx 4.18 \text{ GeV}/c^2$

**$\bar{b}$**

anti-bottom

Quark Cards  
+1/3  
 $\approx 4.18 \text{ GeV}/c^2$

Quark Cards  
+1/3  
 $\approx 4.18 \text{ GeV}/c^2$

**$\bar{b}$**

anti-bottom

Quark Cards  
+1/3  
 $\approx 4.18 \text{ GeV}/c^2$

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**$\bar{b}$**

anti-bottom

Quark Cards  
+1/3  
 $\approx 4.18 \text{ GeV}/c^2$

Quark Cards  
+2/3  
 $\approx 173.1 \text{ GeV}/c^2$

**t**

top

Quark Cards  
+2/3  
 $\approx 173.1 \text{ GeV}/c^2$

Quark Cards  
-1/3  
 $\approx 4.18 \text{ GeV}/c^2$

**b**

bottom

Quark Cards  
-1/3  
 $\approx 4.18 \text{ GeV}/c^2$

Quark Cards  
-1/3  
 $\approx 4.18 \text{ GeV}/c^2$

**b**

bottom

Quark Cards  
-1/3  
 $\approx 4.18 \text{ GeV}/c^2$

Quark Cards  
-1/3  
 $\approx 4.18 \text{ GeV}/c^2$

**b**

bottom

Quark Cards  
-1/3  
 $\approx 4.18 \text{ GeV}/c^2$





