

masse →  $\approx 2.3 \text{ MeV}/c^2$   
 charge →  $2/3$   
 spin →  $1/2$

**u**  
up

masse →  $\approx 1.275 \text{ GeV}/c^2$   
 charge →  $2/3$   
 spin →  $1/2$

**c**  
charm

masse →  $\approx 173.07 \text{ GeV}/c^2$   
 charge →  $2/3$   
 spin →  $1/2$

**t**  
top

# QUARKS

masse →  $\approx 4.8 \text{ MeV}/c^2$   
 charge →  $-1/3$   
 spin →  $1/2$

**d**  
down

masse →  $\approx 95 \text{ MeV}/c^2$   
 charge →  $-1/3$   
 spin →  $1/2$

**s**  
strange

masse →  $\approx 4.18 \text{ GeV}/c^2$   
 charge →  $-1/3$   
 spin →  $1/2$

**b**  
bottom

masse →  $0.511 \text{ MeV}/c^2$   
 charge →  $-1$   
 spin →  $1/2$

**e**  
electron

masse →  $105.7 \text{ MeV}/c^2$   
 charge →  $-1$   
 spin →  $1/2$

**μ**  
muon

masse →  $1.777 \text{ GeV}/c^2$   
 charge →  $-1$   
 spin →  $1/2$

**τ**  
tau

# LEPTONS

masse →  $< 2.2 \text{ eV}/c^2$   
 charge →  $0$   
 spin →  $1/2$

**ν<sub>e</sub>**  
electron neutrino

masse →  $< 0.17 \text{ MeV}/c^2$   
 charge →  $0$   
 spin →  $1/2$

**ν<sub>μ</sub>**  
muon neutrino

masse →  $< 15.5 \text{ MeV}/c^2$   
 charge →  $0$   
 spin →  $1/2$

**ν<sub>τ</sub>**  
tau neutrino

masse →  $\approx 2.3 \text{ MeV}/c^2$   
 charge →  $-2/3$   
 spin →  $1/2$

**ū**  
ū

masse →  $\approx 1.275 \text{ GeV}/c^2$   
 charge →  $-2/3$   
 spin →  $1/2$

**c̄**  
c̄

masse →  $\approx 173.07 \text{ GeV}/c^2$   
 charge →  $-2/3$   
 spin →  $1/2$

**t̄**  
t̄

masse →  $\approx 4.8 \text{ MeV}/c^2$   
 charge →  $+1/3$   
 spin →  $1/2$

**d̄**  
d̄

masse →  $\approx 95 \text{ MeV}/c^2$   
 charge →  $+1/3$   
 spin →  $1/2$

**s̄**  
s̄

masse →  $\approx 4.18 \text{ GeV}/c^2$   
 charge →  $+1/3$   
 spin →  $1/2$

**b̄**  
b̄

masse →  $0.511 \text{ MeV}/c^2$   
 charge →  $+1$   
 spin →  $1/2$

**ē**  
ē

masse →  $105.7 \text{ MeV}/c^2$   
 charge →  $+1$   
 spin →  $1/2$

**μ̄**  
μ̄

masse →  $1.777 \text{ GeV}/c^2$   
 charge →  $+1$   
 spin →  $1/2$

**τ̄**  
τ̄