

Standard model

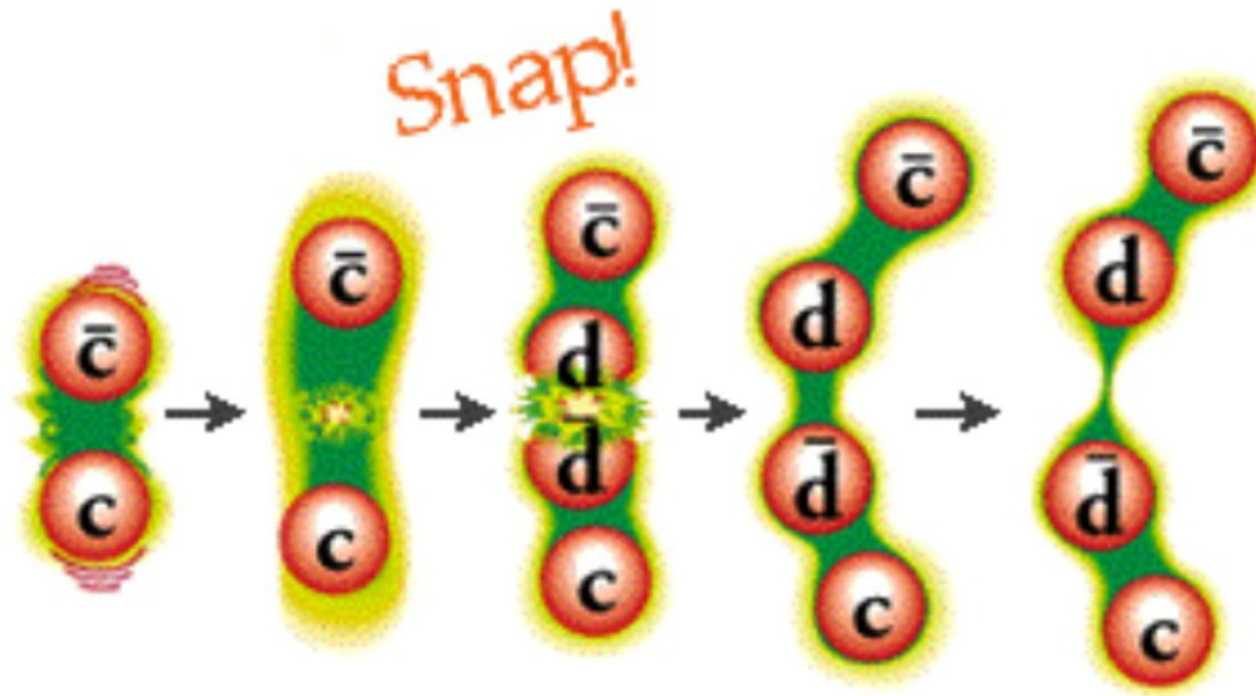
		three generations of matter (fermions)			interactions / force carriers (bosons)	
		I	II	III		
QUARKS	mass	$\approx 2.2 \text{ MeV}/c^2$	$\approx 1.28 \text{ GeV}/c^2$	$\approx 173.1 \text{ GeV}/c^2$	0	$\approx 124.97 \text{ GeV}/c^2$
	charge	$\frac{2}{3}$	$\frac{2}{3}$	$\frac{2}{3}$	0	0
	spin	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	0
		u up	c charm	t top	g gluon	H higgs
		$\approx 4.7 \text{ MeV}/c^2$	$\approx 96 \text{ MeV}/c^2$	$\approx 4.18 \text{ GeV}/c^2$	0	
		$-\frac{1}{3}$	$-\frac{1}{3}$	$-\frac{1}{3}$	0	
		$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	
		d down	s strange	b bottom	γ photon	
LEPTONS		$\approx 0.511 \text{ MeV}/c^2$	$\approx 105.66 \text{ MeV}/c^2$	$\approx 1.7768 \text{ GeV}/c^2$	$\approx 91.19 \text{ GeV}/c^2$	
		-1	-1	-1	0	
		$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	
		e electron	μ muon	τ tau	Z Z boson	
		$< 1.0 \text{ eV}/c^2$	$< 0.17 \text{ MeV}/c^2$	$< 18.2 \text{ MeV}/c^2$	$\approx 80.39 \text{ GeV}/c^2$	
		0	0	0	± 1	
		$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	
		ν_e electron neutrino	ν_μ muon neutrino	ν_τ tau neutrino	W W boson	

SCALAR BOSONS

GAUGE BOSONS
VECTOR BOSONS



Quark confinement



Baryons

Particle	Symbol	Makeup	Rest mass MeV/c ²	Spin	B	S	Lifetime (seconds>	Decay Modes
<u>Proton</u>	p	uud	938.3	1/2	+1	0	Stable	...
<u>Neutron</u>	n	ddu	939.6	1/2	+1	0	920	$p e^- \bar{\nu}_e$
<u>Lambda</u>	Λ^0	uds	1115.6	1/2	+1	-1	2.6×10^{-10}	$p \pi^-, n \pi^0$
<u>Sigma</u>	Σ^+	uus	1189.4	1/2	+1	-1	0.8×10^{-10}	$p \pi^0, n \pi^+$
<u>Sigma</u>	Σ^0	uds	1192.5	1/2	+1	-1	6×10^{-20}	$\Lambda^0 \gamma$
<u>Sigma</u>	Σ^-	dds	1197.3	1/2	+1	-1	1.5×10^{-10}	$n \pi^-$
<u>Delta</u>	Δ^{++}	uuu	1232	3/2	+1	0	0.6×10^{-23}	$p \pi^+$
<u>Delta</u>	Δ^+	uud	1232	3/2	+1	0	0.6×10^{-23}	$p \pi^0$
<u>Delta</u>	Δ^0	udd	1232	3/2	+1	0	0.6×10^{-23}	$n \pi^0$
<u>Delta</u>	Δ^-	ddd	1232	3/2	+1	0	0.6×10^{-23}	$n \pi^-$
<u>Xi Cascade</u>	Ξ^0	uss	1315	1/2	+1	-2	2.9×10^{-10}	$\Lambda^0 \pi^0$
<u>Xi Cascade</u>	Ξ^-	dss	1321	1/2	+1	-2	1.64×10^{-10}	$\Lambda^0 \pi^-$
<u>Omega</u>	Ω^-	sss	1672	3/2	+1	-3	0.82×10^{-10}	$\Xi^0 \pi^-, \Lambda^0 K^-$
<u>Lambda</u>	Λ_c^+	udc	2281	1/2	+1	0	2×10^{-13}	...



Mesons

Particle	Symbol	Anti-particle	Makeup	Rest mass MeV/c ²	S	C	B	Lifetime	Decay Modes
Pion	π^+	π^-	$u\bar{d}$	139.6	0	0	0	2.60×10^{-8}	$\mu^+\nu_\mu$
Pion	π^0	Self	$\frac{u\bar{u} - d\bar{d}}{\sqrt{2}}$	135.0	0	0	0	0.83×10^{-16}	2γ
Kaon	K^+	K^-	$u\bar{s}$	493.7	+1	0	0	1.24×10^{-8}	$\mu^+\nu_\mu, \pi^+\pi^0$
Kaon	K^0_s	K^0_s	$\frac{d\bar{s} - s\bar{d}}{\sqrt{2}}$	497.7	+1	0	0	0.89×10^{-10}	$\pi^+\pi^-, 2\pi^0$
Kaon	K^0_L	K^0_L	$\frac{d\bar{s} + s\bar{d}}{\sqrt{2}}$	497.7	+1	0	0	5.2×10^{-8}	$\pi^+e^-\nu_e$
Eta	η^0	Self	$\frac{u\bar{u} + d\bar{d} - 2s\bar{s}}{\sqrt{6}}$	548.8	0	0	0	$<10^{-18}$	$2\gamma, 3\mu$
Eta prime	η'	Self	$\frac{u\bar{u} + d\bar{d} + s\bar{s}}{\sqrt{3}}$	958	0	0	0	...	$\pi^+\pi^-\eta$
Rho	ρ^+	ρ^-	$u\bar{d}$	770	0	0	0	0.4×10^{-23}	$\pi^+\pi^0$
Rho	ρ^0	Self	$u\bar{u}, d\bar{d}$	770	0	0	0	0.4×10^{-23}	$\pi^+\pi^-$
Omega	ω^0	Self	$u\bar{u}, d\bar{d}$	782	0	0	0	0.8×10^{-22}	$\pi^+\pi^-\pi^0$

Particle	Symbol	Anti-particle	Makeup	Rest mass MeV/c ²	S	C	B	Lifetime	Decay Modes
Phi	ϕ	Self	$s\bar{s}$	1020	0	0	0	20×10^{-23}	$K^+K^-, K^0\bar{K}^0$
D	D^+	D^-	$c\bar{d}$	1869.4	0	+1	0	10.6×10^{-13}	$K^+_, e^+_-$
D	D^0	\bar{D}^0	$c\bar{u}$	1864.6	0	+1	0	4.2×10^{-13}	$[K, \mu, e]^+_-$
D	D^+_s	D^-_s	$c\bar{s}$	1969	+1	+1	0	4.7×10^{-13}	K^+_-
J/Psi	J/ψ	Self	$c\bar{c}$	3096.9	0	0	0	0.8×10^{-20}	$e^+e^-, \mu^+\mu^-...$
B	B^-	B^+	$b\bar{u}$	5279	0	0	-1	1.5×10^{-12}	$D^0^+_-$
B	B^0	\bar{B}^0	$d\bar{b}$	5279	0	0	-1	1.5×10^{-12}	$D^0^+_-$
B _s	B^-_s	B^+_s	$s\bar{b}$	5370	-1	0	-1	...	$B^-_s^+_-$
Upsilon	Υ	Self	$b\bar{b}$	9460.4	0	0	0	1.3×10^{-20}	$e^+e^-, \mu^+\mu^-...$

Note that an underline indicates an antiparticle.

