

# Mesons

Particle	Symbol	Anti-particle	Makeup	Rest mass MeV/c <sup>2</sup>	S	C	B	Lifetime	Decay Modes
<a href="#">Pion</a>	$\pi^+$	$\pi^-$	$\underline{u}\underline{d}$	139.6	0	0	0	$2.60 \times 10^{-8}$	$\mu^+\nu_\mu$
<a href="#">Pion</a>	$\pi^0$	Self	$\frac{u\bar{u} + d\bar{d}}{\sqrt{2}}$	135.0	0	0	0	$0.83 \times 10^{-16}$	$2\gamma$
<a href="#">Kaon</a>	$K^+$	$K^-$	$\underline{u}\underline{s}$	493.7	+1	0	0	$1.24 \times 10^{-8}$	$\mu^+\nu_\mu, \pi^+\pi^0$
<a href="#">Kaon</a>	$K_s^0$	$K_s^0$	1*	497.7	+1	0	0	$0.89 \times 10^{-10}$	$\pi^+\pi^-, 2\pi^0$
<a href="#">Kaon</a>	$K_L^0$	$K_L^0$	1*	497.7	+1	0	0	$5.2 \times 10^{-8}$	$\pi^+e^-\bar{\nu}_e$
<a href="#">Eta</a>	$\eta^0$	Self	2*	548.8	0	0	0	$<10^{-18}$	$2\gamma, 3\mu$
<a href="#">Eta prime</a>	$\eta'$	Self	2*	958	0	0	0	...	$\pi^+\pi^-\eta$
<a href="#">Rho</a>	$\rho^+$	$\rho^-$	$\underline{u}\underline{d}$	770	0	0	0	$0.4 \times 10^{-23}$	$\pi^+\pi^0$
<a href="#">Rho</a>	$\rho^0$	Self	$\underline{u}\underline{u}, \underline{d}\underline{d}$	770	0	0	0	...	$\pi^0\pi^0$
<a href="#">Omega</a>	$\omega^0$	Self	$\underline{u}\underline{u}, \underline{d}\underline{d}$	782	0	0	0	...	$\pi^+\pi^-\pi^0$
<a href="#">Phi</a>	$\phi$	Self	$\underline{s}\underline{s}$	1020	0	0	0	$20 \times 10^{-23}$	$K^+K^-, K^0\bar{K}^0$
<a href="#">D</a>	$D^+$	$D^-$	$\underline{c}\underline{d}$	1869.4	0	+1	0	$10.6 \times 10^{-13}$	$K + \_ , e + \_$
<a href="#">D</a>	$D^0$	$\underline{D}^0$	$\underline{c}\underline{u}$	1864.6	0	+1	0	$4.2 \times 10^{-13}$	$[K, \mu, e] + \_$
<a href="#">D</a>	$D_s^+$	$D_s^-$	$\underline{c}\underline{s}$	1969	+1	+1	0	$4.7 \times 10^{-13}$	$K + \_$
<a href="#">J/Psi</a>	$J/\psi$	Self	$\underline{c}\underline{c}$	3096.9	0	0	0	$0.8 \times 10^{-20}$	$e^+e^-, \mu^+\mu^- \dots$
<a href="#">B</a>	$B^-$	$B^+$	$\underline{b}\underline{u}$	5279	0	0	-1	$1.5 \times 10^{-12}$	$D^0 + \_$
<a href="#">B</a>	$B^0$	$\underline{B}^0$	$\underline{d}\underline{b}$	5279	0	0	-1	$1.5 \times 10^{-12}$	$D^0 + \_$
<a href="#">B<sub>s</sub></a>	$B_s^0$	$\underline{B}_s^0$	$\underline{s}\underline{b}$	5370	0	0	-1	...	$B_s^- + \_$

<a href="#">Upsilon</a>	Y	Self	<u>bb</u>	9460.4	0	0	0	$1.3 \times 10^{-20}$	$e^+e^-, \mu^+\mu^-..$
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Note that an underline indicates an antiparticle.

[To Baryon Table](#)

Mesons are intermediate mass particles which are made up of a [quark](#)-antiquark pair. Three quark combinations are called [baryons](#). Mesons are [bosons](#), while the baryons are [fermions](#).

1\* The neutral [Kaons](#)  $K_s^0$  and  $K_L^0$  represent symmetric and antisymmetric mixtures of the quark combinations down-antistrange and antidown-strange.

2\* The neutral eta meson is considered to be a quark combination

$$\frac{u\bar{u} + d\bar{d} - 2s\bar{s}}{\sqrt{6}}$$