

Table II-2b. Some physical properties of quarks, baryons, mesons, and leptons.

Quarks (one half spin; interacting via strong force)						
Name	Symbol	Antiparticles	Rest mass (MeV)	Electric charge		
down	d	\bar{d}	310	-1/3	Note: for antiparticles, electric charges change sign.	
up	u	\bar{u}	310	+2/3		
strange	s	\bar{s}	505	-1/3		
charm	c	\bar{c}	1500	+2/3		
bottom	b	\bar{b}	5000	-1/3		
top	t	\bar{t}	>22500	+2/3		
Baryons (one half spin; interacting via strong force)						
Name	Symbol	Antiparticles	Rest mass (MeV)	Electric charge	Quark content	Threshold temp.(10 ¹² K)
proton	p	\bar{p}	938.3	+1	uud	10.91
neutron	n	\bar{n}	939.6	0	udd	10.93
lambda	Λ^0	$\bar{\Lambda}^0$	1115.6	0	uds	12.97
sigma	Σ^+	$\bar{\Sigma}^-$	1189.4	+1	uus	13.83
	Σ^-	$\bar{\Sigma}^+$	1197.3	-1	dds	13.92
Mesons (integer spin; interacting via strong force)						
Name	Symbol	Antiparticles	Rest mass (MeV)	Electric charge	Quark content	Threshold temp.(10 ¹² K)
pion	Π^0	self	135.0	0	u \bar{u} , d \bar{d}	1.57
	Π^+	Π^-	139.6	+1	u \bar{d}	1.62
kaon	K^+	K^-	493.7	+1	u \bar{s}	5.74
	K^0	\bar{K}^0	497.7	0	d \bar{s}	5.79
eta	η^0	self	548.8	0	u \bar{u} , d \bar{d} , s \bar{s}	6.38
Leptons (one half spin; interacting via weak force)						
Name	Symbol	Antiparticles	Rest mass (MeV)	Electric charge	Threshold temp.(10 ¹² K)	
electron	e ⁻	e ⁺	0.511	-1	0.006	
e-neutrino	ν	$\bar{\nu}_e$	0(<5x10 ⁻⁵)	0		
muon	μ^-	μ^+	105.7	-1	1.23	
μ -neutrino	ν_μ	$\bar{\nu}_\mu$	0(<0.52)	0		
tauon	τ^-	τ^+	1784	-1	20.7	

Note: quarks, baryons, and leptons all have one half spin, and are collectively called fermions, which follow Pauli's Exclusion Principle i.e. no two fermion particles can have the exact same quantum states. Mesons and force carrier particles all have integer spin, and are called bosons, which do not follow Pauli's Principle. Baryons also include others like Xi, Omega.