

Standard Model of Elementary Particles

three generations of matter (elementary fermions)			three generations of antimatter (elementary antifermions)			interactions / force carriers (elementary bosons)	
I	II	III	I	II	III		
mass charge spin	=2.2 MeV/c ² 2/3 1/2 u up	=1.28 GeV/c ² 2/3 1/2 c charm	=173.1 GeV/c ² 2/3 1/2 t top	=2.2 MeV/c ² -2/3 1/2 ū antiup	=1.28 GeV/c ² -2/3 1/2 ć anticharm	=173.1 GeV/c ² -2/3 1/2 t̄ antitop	0 0 1 g gluon
mass charge spin	=4.7 MeV/c ² -1/3 1/2 d down	=96 MeV/c ² -1/3 1/2 s strange	=4.18 GeV/c ² -1/3 1/2 b bottom	=4.7 MeV/c ² 2/3 1/2 d̄ antidown	=96 MeV/c ² 2/3 1/2 ś antistrange	=4.18 GeV/c ² 2/3 1/2 b̄ antibottom	0 0 1 γ photon
mass charge spin	=0.511 MeV/c ² -1 1/2 e electron	=105.66 MeV/c ² -1 1/2 μ muon	=1.7768 GeV/c ² -1 1/2 τ tau	=0.511 MeV/c ² 1 1/2 e⁺ positron	=105.66 MeV/c ² 1 1/2 μ̄ antimuon	=1.7768 GeV/c ² 1 1/2 τ̄ antitau	=91.19 GeV/c ² 0 1 Z Z⁰ boson
mass charge spin	<2.2 eV/c ² 0 1/2 ν_e electron neutrino	<0.17 MeV/c ² 0 1/2 ν_μ muon neutrino	<18.2 MeV/c ² 0 1/2 ν_τ tau neutrino	<2.2 eV/c ² 0 1/2 ν̄_e electron antineutrino	<0.17 MeV/c ² 0 1/2 ν̄_μ muon antineutrino	<18.2 MeV/c ² 0 1/2 ν̄_τ tau antineutrino	=80.39 GeV/c ² 1 1 W⁺ W⁺ boson
mass charge spin							=80.39 GeV/c ² -1 1 W⁻ W⁻ boson

SCALAR BOSON

GAUGE BOSONS

QUARKS

LEPTONS

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