

Comparison of Charge and Mass.

We are familiar with role of mass in gravitation, and we have just studied some features of electric charge. We can compare the two as shown below

Charge	Mass
(1) Electric charge can be positive, negative or zero.	(1) Mass of a body is a positive quantity.
(2) Charge carried by a body does not depend upon velocity of the body.	(2) Mass of a body increases with its velocity as $m = \frac{m_0}{\sqrt{1 - v^2 / c^2}}$ where c is velocity of light in vacuum, m is the mass of the body moving with velocity v and m_0 is rest mass of the body.
(3) Charge is quantized.	(3) The quantization of mass is yet to be established.
(4) Electric charge is always conserved.	(4) Mass is not conserved as it can be changed into energy and vice-versa.
(5) Force between charges can be attractive or repulsive, according as charges are unlike or like charges.	(5) The gravitational force between two masses is always attractive.