Negative lengths and masses

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Abstract: we prove that a negative length and mass are absent in nature if there are negative charges with not equal to one factors in the form of dimensionless fundamental constants.

Let us cite the well-known formula for the Planck units of mass m_P and length l_P:

$$m_P = \sqrt{\frac{h \cdot c}{G}}, \tag{1}$$

$$l_P = \sqrt{\frac{h \cdot G}{c^3}}. \tag{2}$$

Multiplying (1) and (2), we obtain:

$$m_P \cdot l_P = \frac{h}{c}. \tag{3}$$

Denote $q_P^{\pm} = \pm\sqrt{h \cdot c}$ – Planck charge.

If $q_P^{-} = -\sqrt{h \cdot c}$ then (1) can be written as

$$m_P = \frac{-\sqrt{h \cdot c}}{\sqrt{G}} \tag{4}$$

and (2) how

$$l_P = -\sqrt{h \cdot c} \cdot \sqrt{\frac{G}{c^4}}, \tag{5}$$

then (3) subject to (4) and (5), can be written as

$$-m_P \cdot -l_P = +\frac{h}{c} \tag{6}$$

and as

$$-m_P \cdot +l_P = -\frac{h}{c} \text{ or } +m_P \cdot -l_P = -\frac{h}{c}. \tag{7}$$

Comment on the situation:

In accordance with (6) in nature, except for negative masses, must have a negative length.

According to (7) are constants h and c have different signs and then $q_P^{-} = -\sqrt{-h \cdot c}$, i.e. there are no valid values q_P^{-}, which means that in nature should be no negative charges.

The way out of this situation is to write a formula for the charge $q^{\pm}$ in the form $q_i^{\pm} = \pm\sqrt{k_{\alpha i}} \cdot +\sqrt{h \cdot c}$, where is $k_{\alpha i}$ – a dimensionless fundamental constant.

$$q_i^{\pm} = \pm\sqrt{k_{\alpha i}} \cdot \sqrt{h \cdot c}, \qquad k_{\alpha i} \neq 1. \tag{8}$$

Conclusion: negative length and mass are absent in nature if there are negative charges with not equal to one factors in the form of dimensionless fundamental constants.