

# Crossing Limit Velocity $v = c$

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ABSTRACT: One has stated the thesis that the real mass particle must create a complex with a complex mass particle in purpose to cross the limit velocity  $v = c$ . This complex may dissociate both to the particles with the initial masses or this process can give the real mass particle. Purely complex mass makes possible the motion with the velocity  $v > c$ .

The crossing the velocity  $v = c$

We have traditionally:

$$m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}} \quad (1)$$

Let's notice that if:

$$v = v_1 + iv_2 \quad (2)$$

then there exists none singularity in this equation which could mean the tunneling to another Universe in the case  $v = c$ .

But the mass of the particle with the velocity described by the formula (2) must be expressed by a complex number too.

It means that to the end of tunneling a complex of the particle and machyon must be created. Then one can cross "with impunity" the velocity  $v = c$  but in the region of  $v = c$  complex mass arises or one comes back to the velocity  $< c$ .

The system: a machyon (with mass  $m_1 + im_2$ ) and a real particle ( $M_3$ ) is created. In purpose to make possible the crossing the barrier  $v = c$  the combined state of two objects and three masses must be created. It means that the mutual interaction potential

of these three masses in at least 8-dimensional space-time must have a binding minimum. So the interaction of three masses is realized. We have the three-particle process in which the interaction  $I$  is proportional to all three masses.

We obtain:

$$I \sim m_1 (im_2) M_3 = (im_1) m_2 M_3 = m_1 m_2 (iM_3)$$

The last equality is especially interesting because the unity of multiplication implicates that the mass  $M_3$  may become the mass  $iM_3$  and move farther with the real velocity  $v > c$ .

Next, the machyon may transform into a real mass particle and tachyon.