Speciální teorie relativity

$x' = \gamma(x - vt), \quad x = \gamma(x' + vt'),$ $y' = y, \quad y = y',$ $z' = z, \quad z = z',$ $t' = \gamma(t - vx/c^2), \quad t = \gamma(t' + vx'/c^2),$ $\gamma = \frac{1}{\sqrt{1-(v/c)^2}} = \frac{1}{\sqrt{1-\beta^2}}.$	**Lorentzova transformace**
$t_2' - t_1' = (t_2 - t_1)\sqrt{1-\frac{v^2}{c^2}}$	**Dilatace času**
$x_2' - x_1' = \frac{x_2 - x_1}{\sqrt{1-v^2/c^2}} = \gamma(x_2 - x_1)$	**Kontrakce délek**
$u_x = \frac{u_x' + v}{1+\frac{u_x' v}{c^2}}, \quad u_y = \frac{u_y'}{\gamma\left(1+\frac{u_x' v}{c^2}\right)}, \quad u_z = \frac{u_z'}{\gamma\left(1+\frac{u_x' v}{c^2}\right)},$ $u_x' = \frac{u_x - v}{1-\frac{u_x v}{c^2}}, \quad u_y' = \frac{u_y}{\gamma\left(1-\frac{u_x v}{c^2}\right)}, \quad u_z' = \frac{u_z}{\gamma\left(1-\frac{u_x v}{c^2}\right)}.$	**Rovnice pro transformaci složek rychlostí**
$m = \frac{m_0}{\sqrt{1-\frac{u^2}{c^2}}} = \gamma m_0$	**Relativistická hmotnost částice**
$\vec{p} = \frac{m_0 \vec{u}}{\sqrt{1-\frac{u^2}{c^2}}} = \gamma m_0 \vec{u}$	**Relativistická hybnost**
$\vec{F} = \frac{\mathrm{d}\vec{p}}{\mathrm{d}t} = \frac{\mathrm{d}}{\mathrm{d}t}\left(\frac{m_0 \vec{u}}{\sqrt{1-u^2/c^2}}\right)$	**Relativistický pohybový zákon**
$W_k = mc^2 - m_0 c^2$	**Kinetická energie**