Further conclusions based on the theory, "A relativistic theory based on the invariance of Newton's second law for motion and the constancy of the speed of light in vacuum".

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From the equation, $dP = \lambda' \, dP'$, where $\lambda' = \left(1 + \frac{\Gamma}{c}\right)$, and the equation, $v = (v' + \Gamma)/(1 + \frac{\Gamma}{C})$, where v' is the speed of an object relative to S' and v is the speed of the same object relative to S, we obtain $m(v)\,(v - \Gamma)/(1 + \frac{\Gamma}{C}) = \left(1 + \frac{\Gamma}{c}\right) m'\,(v')v'$. We obtain the following equations from the above equations:

a) Relativistic mass, $m(v) = m_0(1 + \frac{v}{c})^2$, where m_0 is the rest mass of the object.

b) Relativistic Kinetic Energy, KE_R, is given by $m_0 v^2 \left(\frac{1}{2} + \frac{4v}{3c} + \frac{3v^2}{4c^2}\right)$.

c) The total energy, E_T, that is contained in an object with relativistic mass, $m(v)$, traveling at a relativistic speed, v, is given by: $E_T = m(v)\,C^2 + KE_R$.

d) If we have an object of rest mass, m_o, and we put in enough energy, E, into it, then this energy gets apportioned into two parts. The first part goes into turning the rest mass into relativistic mass, while the second part remains as energy, mostly in the form of the kinetic energy of the relativistic mass. However, if the energy, E, is not high enough, then it remains as energy only, mostly as the kinetic energy of the rest mass. This is the formulation of a new law of physics when dealing with energy and an object with a rest mass, m_0. The more general formulation of this law is the following: If we have an energy, E, then, depending upon its value, it will remain as energy or give rise to matter with energy, usually kinetic energy of the newly formed matter, associated with it. Now, whether this mass and the kinetic energy are relativistic, again depends on the value of E. A corollary of this law is that the energy, E, cannot turn completely into matter alone without that matter having a form of energy associated with it. This means, the famous energy/mass equation by Einstein, $E = MC^2$, is not entirely correct physically, i.e. $E \longleftrightarrow M$ is not true. The M can convert completely into pure energy alone, but the E cannot completely convert into pure matter alone. When energy coverts into matter, there is always some energy, in some form (usually as kinetic energy) that is associated with the newly formed matter. We can put this in the following way: $M \longrightarrow E, but\ E \longrightarrow m + e$. The question of why this is so, is something that can be investigated further and may or may not be explainable by a theory. This law, most likely, falls into the same category as the law of the conservation of momentum and the law of conservation of matter/energy and hence is axiomatic and is one of the laws that is needed for the origin and existence of our universe.

e) If we consider the above equation relating v and v', we see that for $v' = 0, v = \Gamma/(1 + \frac{\Gamma}{C})\ and \neq \Gamma,$ as we had expected based on our knowledge from observing non-relativistic events. However, if, $\Gamma \ll C$, then $v \simeq \Gamma$ as we expect for non-relativistic speeds. We also see that, as $\Gamma \longrightarrow \infty$, $v \longrightarrow c$ and not infinity as we would have expected. This is another example where we see our expectations, based on non-relativistic events, break down when we consider relativistic events.

References:

1) A relativistic theory based on the invariance of Newton's second law for motion and the constancy of the speed of light in vacuum. Mustafa A. Khan. viXra: 1406.0054. viXra.org.