Final Word

The alternative derivations examined in this treatise show how the results of relativity theory can be confirmed on the basis of classical physics.

It is shown that, by deducing several statements of the Special Theory of Relativity, Newtonian mechanics covers a much wider range of applications than is normally assumed.

The Mass-Energy Equivalence Principle -

The relation of the dependence of the mass on the speed -

The equation of the total energy of the point mass -

The relativistic triangle that geometrically illustrates the relationship between energy, mass and momentum of a point mass -

The velocity addition formula according with the theorem of Einstein -

The relation of relativistic length contraction and time dilation depending on speed –

The alternative derivation of the Lorentz transformations -

The electromagnetic frequency shift for arbitrary velocities -

The relativistic acceleration, dependent on speed ...

In the world of physics, these relations are considered strictly relativistic and can therefore only be proven by the Lorentz transformation.

As shown above, they can also be derived starting from classical physics by applying the second law of Newton's dynamics, the energy-mass equivalence principle and the conservation laws of energy and momentum.