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Conservation equations in the relativistic and non-relativistic fluids with the three mechanisms for energy-momentum transferring

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Abstract

In this paper we obtain the conservation equations of momentum-energy of a relativistic fluid in the flat space-time. Three mechanisms for energy and momentum transferring are considered, which are: perfect fluid, stress viscosity and heat transfer mechanisms. The effect of magnetic field is ignored in this paper. Also, the connection of relativistic and non-relativistic equations are seen in this paper, so, the non-relativistic equations can be modified with the relativistic influences.

The method of deriving energy and momentum conservation equations and connection of relativistic and non-relativistic conservation equations of this paper, is available to use for a variety of energy and momentum transfer mechanisms, also, applicable to all metrics.

Keywords: conservation equations of relativistic fluids, connection of relativistic and non-relativistic equations, influence of heat flux in conservation equation.

For full article, refer to the Persian section