

Iranian Journal of Physics Research, Vol. 22, No. 1, 2022 DOI: 10.47176/ijpr.22.1.21162

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

M Moeen Moghaddas

Department of Sciences, Kosar university of Bojnord, Bojnord, Iran

E-mail: dr.moeen@kub.ac.ir

(Received 4 December 2020; in final form 20 June 2021)

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