

# The density of the body in three-dimensional Euclidean space and special relativity

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**Abstract.** Density of a body is the physical quantity that expresses the relationship between its mass and volume. Considered in thermodynamics terms density of body varies proportionately with the change of pressure and body temperature. Considered in kinematic terms, according to Galilean-Newtonian mechanics, it is known that the density of a body does not change, because the mass and volume of body does not depend on its velocity. This paper will examine the behavior of density of a body in kinematic terms, according to the theory of special relativity (TSR). According to TSR the mass and volume of a body varies depending on its velocity. Then, the question is the behavior of density of a body according to TSR. After a simple theoretical analysis is concluded that the density of a body (considered in kinematic terms) is invariant quantity in relative motion even according to the TSR. The behavior of density of bodies in relative motion is slightly or not at all treated in the works and texts that address this theory.

**Key-words:** Density, mass, volume, special relativity.