ON THE LOGICAL ANALYSIS OF THE FOUNDATIONS OF VECTOR CALCULUS

Temur Z. Kalanov
Home of Physical Problems,
Pisatelskaya Tashkent,
UZBEKISTAN
t.z.kalanov@mail.ru

ABSTRACT

A critical analysis of the foundations of standard vector calculus is proposed. The methodological basis of the analysis is the unity of formal logic and of rational dialectics. It is proved that the vector calculus is incorrect theory because: (a) it is not based on a correct methodological basis – the unity of formal logic and of rational dialectics; (b) it does not contain the correct definitions of "movement", "direction" and "vector"; (c) it does not take into consideration the dimensions of physical quantities (i.e., number names, denominate numbers, concrete numbers), characterizing the concept of "physical vector", and, therefore, it has no natural-scientific meaning; (d) operations on "physical vectors" and the vector calculus propositions relating to the "physical vectors" are contrary to formal logic.

Keywords: Mathematics, vector calculus, geometry, physics, engineering, philosophy of science