

Peer Review

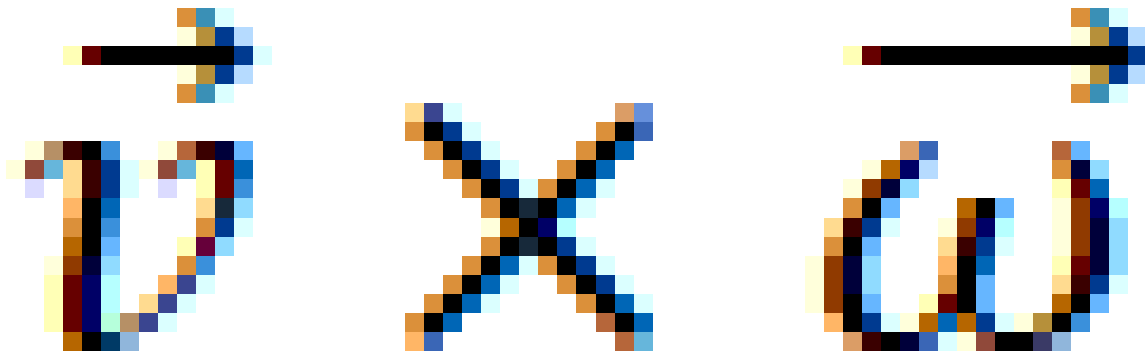
Review of: "Unification of the Fluid Flow Field, the Electromagnetic Field-Strength Tensors, and the Field Dynamic Equations"

Abhik Kumar Sanyal¹

1. Independent researcher

Qeios Review:

The author aims at unifying the fluid flow field with the electro-magnetic field in 4-dimensional Minkowski space-time. Although the computation appears to be correct, the theory was developed almost a century back [H. Alfvén, Existence of electromagnetic hydrodynamic waves, *Nature*, 150, 405 (1942)] and is known as Alfvén waves, for which he also received the Nobel Prize in 1970. Further, in contrast to the statement 'It is confirmed that the Navier-Stokes equations are not complete...', the term



is known as the Lamb vector [H. Lamb, Hydrodynamics, Cambridge Univ. Press, 134 (1932)], which is analogous to the electric field when the Navier-Stokes equation is compared with Maxwell's equations. Presently, such unification falls under the jurisdiction of 'Magnetohydrodynamics' (MHD), which essentially describes the interaction between a conducting fluid and a magnetic field. MHD in a 4-D space-time analyzes the interaction of a conducting fluid with a magnetic field within the framework of 'General theory of relativity' (GTR). It has a wide range of applicability, such as in medicine, nuclear reactors, microfluid pumps, power production, geophysics, space travel, astrophysical objects such as accretion discs, stellar winds, and the evolution of large-scale magnetic fields in galaxies. It also holds importance in explaining the structure formation in the very early universe. In fact, MHD is taught at the undergraduate level.

The author has violated fundamental ethics by not referring to the Alfvén waves and MHD. The manuscript may only be considered if the authors explicitly exhibit aspects in which their computation differs from the original construct of MHD.

Declarations

Potential competing interests: No potential competing interests to declare.