Commentary
Volume 9:4, 2021

Journal of Astrophysics & Aerospace Technology

ISSN: 2329-6542 Open Access

Development and Dynamics of Quantum Fluids

Zeliang Chen*

Department of Space Technology, Debre Tabor University, Debre, Ethiopia

About the Study

Quantum fluids follow previously unknown quantum mechanics equations. There are two sets of equations. In other words, it is a semi-classical approach to quantum fluids called the Madelung equation. But when embedded in the Schrodinger equation, the new complete quantum transformation of the Maderung equation provides a complete explanation of the evolution of quantum fluids in terms of time and position. The equation presented in this article has two unknown variables. One is the density and the other is the velocity field as a function of spatial and time coordinates.

The equations presented in this article are derived from the Continuity equation and the Schrodinger equation, which follows the Navier-Stokes equation. Baume's potential has been added externally to Madeline's equation. But a new equation that is essentially completely quantum mechanics. The Baumian potential appears outside the equation, which is interesting to observe. The cold stellar dynamics of astrophysics and condensed liquids have the main use of this equation. Quantum liquids behave strangely compared to regular liquids. It has also been shown that quantum fluids also have spins that do not have classical analogs. Quantum fluid mechanics is one of the new research areas of fluid mechanics. Cold superfluidity exhibits quantum mechanical behavior. Classical fluid mechanics is determined by a single equation known as Navier Strokes.

The Navier-Stokes equation is often solved mathematically or using certain assumptions and boundary conditions. The complete analysis problem of the Navier-Stokes equation is still a challenge and a millennium problem. Recent developments in mathematics show that the finite temporal expansion of the three-dimensional Navier-Strokes equation exists in an averaged way. Some people are working on the existence of accurate 3D solutions. Second, the question may arise whether the quantum liquid follows the Navier-Stoke equation. The answer is yes. For quantum liquids, there are a series of two equations called Maderung. This is a quantum variant of the Navier-Stokes equation and the classical liquid continuity equation. Maderung's equation is a semi classical equation that conveys the dynamics of quantum liquids. But "is that enough?" Or we need a complete quantum equation to define the dynamics of the quantum fluid. Examples of quantum fluids include the presence of large numbers of neutrons in a relatively small volume of a neutron star.

They deviate from Maxwell-Boltzmann statistics and follow Fermi-Dirac statistics, which are part of quantum statistical mechanics. Another common example is the Bose Einstein condensate, which does not follow Maxwell-Boltzmann statistics. To explain this wide variety of fluids that are important for condensed matter physics and astrophysics, we need new equations to explain the dynamics of these systems. Some important concepts used in the work in this project include the idea of multi-particle Eigen functions. This is clearly inevitable. Liquids are treated as a continuous medium, so it is useful to talk about the field. In the classic case, it is a velocity field, which is a kind of vector field. The new equation begins with an explanation of the multi-particle wave function and then an observation of how to systematically map this idea of discrete multi-particles to cumulative behavior.

How to cite this article: Chen, Zeliang. "Development and Dynamics of Quantum Fluids." *J Astrophys Aerospace Technol* 9 (2021) : 187.

Address for Correspondence: *Zeliang Chen, Department of Space Technology, Debre Tabor University, Debre, Ethiopia, Tel: +251931886423; E-mail: chenzeling@gmail.com*

Received: November 04, 2021; **Accepted**: November 18, 2021; **Published**: November 25, 2021