Abstract Submitted
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A New Dual, Complex Wave/Particle Theoretical View of Viscous Flow Turbulence CLAUDE MASSOT, Retired — The mechanics of turbulence in fluid flows is considered to be the most difficult theoretical problem of Physics. Present, most successful theories rely on a heavy statistical approach. It is experimentally well known, that, according to the rate of flow, there are two distinct regimes: laminar, with very ordered stream lines and turbulent, with a chaotic behavior of the fluid motions. The transition between these two regimes is characterized by a dimensionless Reynolds Number. In a tube, for example, the transition happens at Re=2100. In a falling film at Re=10. In the 2020 APS, Denver and Washington Meetings, I did present my own complex algebra Physics leading to a non relativist theory, expressing the dual de Broglie wave/particle as an entity with a complex mass: a real mass for the particle and an imaginary mass for the associated wave. Here I apply this new concept to fluid dynamics, thus extending Navier-Stockes equation toward Schrodingers equation. For falling films my approach yields a good prediction of the critical Reynolds Number and shows a metastability of laminar flow in tube due to confinement of the constrained fluid.

These results may open a path toward suprafluidity.

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