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The K-essence flow seen from the preferred frame S_V. A scalar field theory with Landau superfluid structure

We study the hypothesis of deformation of the Lorentz transformations by a universal minimum velocity and we seek to apply this hypothesis to superfluids. Relating the minimum velocity to the idea of a fluid, with superfluid properties, in previous works we related the minimum velocity to the cosmological constant and even to cosmic inflation. Soon we could generate a hypothetical superfluid capable of modeling characteristics of a cosmological fluid with dark energy properties. . The first excited state of this universal superfluid would be a preferred-frame from which all other excited states are observed, so we have a preferred-frame S_V associated with the critical Landau velocity, thus implying that the minimum velocity coincides with the critical Landau velocity, thus the objects observed by the preferred-frame are excited states of the superfluid. This coincidence between the concepts of minimum velocity and Landau's critical velocity makes Landau's critical velocity a type of limit velocity, modifying the usual causal structure of restricted relativity. . Formulating the phenomena in this preferred-frame would have the advantage of providing a simple explanation for astrophysical and cosmological phenomena linked to a causal structure, which emerges from this construction and is very similar to causal structures linked to Gordon geometry and acoustic tackyons.
We build a deformed relativistic Lagrangian, demonstrate its relationship with a K-Essence Lagrangian and calculate the quantities associated with this Lagrangian. We also studied an irrotational fluid and verified the role of enthalpy associated with the minimum velocity structure.

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