

Quantum fluids in nanoporous media-Effects of the confinement and fractal geometry

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Abstract

The complex behavior of such quantum fluids like liquid 4He and liquid 3He in nanoporous media is determined by spatial quantization because of geometrical confinement as well as by significant contribution from the surface atoms. In the present report we will review the procedure, results and discuss the issues for fractionalized nonextensive hydrodynamical approach to describe the properties of quantum fluids inside nanopores and propose consideration of strong correlated quantum liquid by means of fractionalized Schrödinger equation. © 2011 Science China Press and Springer-Verlag Berlin Heidelberg.

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Keywords

aerogel, fractional derivative, nanoscale physics, superfluid