

**ON THE QUANTUM NAVIER-STOKES EQUATION IN THE VICINITY OF
THE POINT OF PHASE TRANSITION TO THE SUPERFLUID STATE**

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The study focuses on investigating the dynamics of the phase transition of helium into the superfluid state. The research employs the model constructed using the formalism of finite-temperature Green’s functions in [1]. A method for constructing a quantum analog of the Navier-Stokes equation through the analysis of the time derivative of momentum $\partial_t p$ is proposed. It is demonstrated that the critical dimension of viscosity can be further determined through dimensions of the correlation functions of composite operators.

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References

- [1] J. Honkonen, M. Komarova, Yu. Molotkov, M. Nalimov, and A. Trenogin, *Critical dynamics of the superfluid phase transition: Multiloop calculation of the microscopic model*. Phys. Rev. E, **106**, 014126 (2022)