

# On the solvability of the initial-boundary value problem for a 3-D linearized system of Navier-Stokes equations in a cone

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In the report, we establish the unique solvability of a boundary value problem for a 3-D linearized system of Navier-Stokes equations [1–2] in a degenerate domain represented by a cone. The domain degenerates at the vertex of the cone at the initial moment of time, and, as a consequence of this fact, there are no initial conditions in the problem under consideration [3–5]. At first, the unique solvability of the initial-boundary value problem for the 3-D linearized Navier-Stokes equations system in a truncated cone is established. Then, the original problem for the cone is approximated by a countable family of initial-boundary value problems in domains represented by truncated cones constructed in a specially chosen manner. In the limit, the truncated cones will tend to the original cone. The Faedo-Galerkin method is used to prove the unique solvability of initial-boundary value problems in each of the truncated cones. Carrying out the passage to the limit, we obtain the main result on the solvability of the boundary value problem in a cone.

## References

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