

# INFLUENCE OF KARLEMAN CONDITION BY INVESTIGATING BOUNDARY VALUE PROBLEMS FOR LAPLACE EQUATION

## Abstract

*The paper is devoted to the investigation of Fredholm property of boundary value problems for Laplace equation with nonlocal boundary conditions. Proceeding from non-locality of boundary conditions, at least two points move along the boundaries. If these two points move away from one point of the boundary, or they approach one point of the boundary, then the Karleman conditions are satisfied. If these two boundary points follow one another while moving, then the Karleman conditions don't hold.*

*Thus, in the first problem we obtain the Fredholm property of the stated boundary value problem since the Karleman conditions hold. In the second problem, in spite of the fact that the Karleman conditions don't hold, we again get the Fredholm property of the stated boundary value problems. For the third boundary value problem we show the existence of such a boundary condition for which the stated problem is not Fredholm if the Karleman conditions are not satisfied.*