# NONLINEAR INVERSE PROBLEM FOR THE EQUATION OF PROPAGATION OF LONGITUDINAL WAVES WITH NON-SELF-ADJOINT BOUNDARY CONDITIONS

## Elvin I. Azizbayov[1,2]

[1]The Academy of Public Administration
under the President of the Republic of Azerbaijan, Baku, Azerbaijan

[2]Baku State University, Baku, Azerbaijan

In the presented work the inverse coefficient problem for the equation of propagation of longitudinal waves with non-self-adjoint boundary conditions is investigated. The main purpose of this report is to prove the existence and uniqueness of the classical solution of the considered inverse boundary-value problem. To study the solvability of the inverse problem, we carried out the transition from the original problem to some equivalent auxiliary problem with trivial boundary conditions. Then, using the Fourier method and contraction mappings principle, the solvability of the corresponding auxiliary inverse problem is proved. Furthermore, using the equivalency, the existence and uniqueness of the classical solution of the original problem is shown.