3) Получены необходимые и достаточные условия глобальной разрешимости обратной задачи. Отметим, что в [2] получено локальное решение обратной задачи для уравнения (1) в окрестности начала координат.

Замечание. Задания только одного из следов r^+ (или r^-) недостаточно для однозначного определения функций q_1 и q_0. Однако задание r^+ (или r^-) однозначно определяет один из коэффициентов q_1 (или q_0) при условии, что второй априори известен.

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A FIELD-PANEL METHOD FOR TRANSONIC LIFTING WING CALCULATION

The development of fast numerical methods for calculating transonic flow over 3D lifting configurations is important for numerical optimization purposes. One efficient approach, namely field panel method, is based on the boundary- element methods solving full potential equations (see e.g. [1]). The algorithm incorporates panel method for calculating basic incompressible flow and compressible field calculations. The purpose of the present work to develop a mathematically well- based and efficient field panel method for the analysis of transonic flow over 3D lifting wings, that could be further used for design and optimization of transonic wings in a given range of free stream Mach numbers.

We consider a steady compressible flow over a wing at angle of attack and free stream Mach number. The wing surface is presented as a collection of quadrilaterial panels with piecewise with collocation points in the center of the panels where the flow impermeability conditions are satisfied. The piecewise constant source and doublet singularities are distributed on a sceleton surface inside the wing. A hard wake model is used to satisfy Zhukovskiy- Kutta condition on the trailing edge of the wing. To model the compressible effects a field mesh, containing the whole wing, is introduced. Intensity of the field sources are also assumed to be piecewise constant. The problem of calculating transonic flow over the wing is reduced to solving a nonlinear integral differential equations. Artificial viscosity concept is used to stabilize the solution in the transonic case.

Test calculations for the wings with NACA series profiles and ONERA swept wing are performed to confirm the validity of the method.

To reduce the transonic shock intensity a parametric optimization of the wing shape is performed. Namely, a local 3D bump [2] is introduced on the surface of the wing. Position and the height of the bump are optimized to improve thransonic characteristics of a wing for a given range of free stream Mach numbers.

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A CRITERION OF TRIVIALITY FOR FINITE-SHEETED COVERINGS OF COMPACT CONNECTED ABELIAN GROUPS

In the study of algebraic equations in complex function algebras,