

Russian Aeronautics 2009 vol.52 N2, pages 184-192

Construction of an airfoil with an irregularity in the flow

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Abstract

Using the method of quasisolutions for inverse boundary-value problems of aerohydrodynamics, a problem of constructing an airfoil was solved by the specified velocity distribution along the sought airfoil contour when there is an irregularity in the flow such as a vorticity source. The cases of a source (sink) and vortex are obtained as particular ones. The airfoils are constructed numerically and analytically and conclusions are made about an influence of the irregularity position and type on the shape and aerodynamic characteristics of the airfoil. © Allerton Press, Inc. 2009.

<http://dx.doi.org/10.3103/S1068799809020093>

Keywords

Ideal incompressible fluid, Inverse boundary-value problem of aerohydrodynamics, Source, Vortex, Vorticity source