

One nonlinear variational problem of the theory of cavitating profiles

Maklakov D., Kayumov I.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

In this paper we study the limiting values of the lift and drag coefficients of profiles in the Helmholtz-Kirchhoff (infinite cavity) flow. The coefficients are based on the wetted arc length of profile surfaces. Namely, for a given value of the lift coefficient we find minimum and maximum values of the drag coefficient. Thereby we determine maximum and minimum values of the lift-to-drag ratios. © Allerton Press, Inc., 2012.

<http://dx.doi.org/10.3103/S1066369X12120092>

Keywords

Cavity flows, Extremal problem, Helmholtz-Kirchhoff model, Ideal fluid, Lift-to-drag ratio