

On parachutes of optimum shape in a subsonic gas flow

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Abstract

In this paper the problem of finding the impermeable parachute of optimum shape in a subsonic gas flow has been solved. The effects of compressibility have been taken into account out by making use of ideas of Chaplygin's approximate method. A formula for the drag coefficient has been deduced and by comparison with exact solutions it has been demonstrated that for bluff bodies its related error is no more than 0.5% for any Mach number at infinity less than unity. On the basis of the formula a functional for the drag force has been constructed and its global maximum has been found analytically. It has been shown that the optimum shape is slightly affected by compressibility. © 2007 Cambridge University Press.

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