
Mathematical modeling of separated subsonic flow around axially symmetrical bodies with base pressure

© V.N. Timofeev

Bauman Moscow State Technical University, Moscow, 105005, Russia

The article describes mathematical modeling of the process of the flow separation on axially symmetrical bodies conducted on the base of the concept of viscous–inviscid interaction. Moderate subsonic speeds of the flow of gas were examined. The numerical modeling of the flow process around bodies was carried out by the method of discrete vortices. Hoerner's formula was used for a more complete account of the base pressure influence. We studied flow conditions with flow separation line close to the contour of the rear section. Cylindrical bodies with the head part of the ogival form and without the rear part were examined. The dependences of the length of the tailed section of equivalent body on Reynolds number and length of the body, streamlined with the gas flow, were proposed according to the results of mathematical modeling. The dependences represented in the work make it possible to build the locked and relatively simple procedure of calculation of the separated subsonic flow around bodies taking into account the influence of base pressure.

Keywords: *subsonic separated flow, mathematical modeling, method of discrete vortices, base pressure.*

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Timofeev V.N., Ph.D., Assoc. Professor of the Computational Mathematics and Mathematical Physics Department at Bauman Moscow State Technical University. Author of more than 40 scientific and methodical works. Research interests include mathematical modeling, numerical methods, mechanics of fluids, aerodynamics. e-mail: v_n_1951@mail.ru
