
Calculation of flow around deformable thin wing of finite span

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The article presents a developed hydrodynamic model of deformable caudal fin in steady motion. We obtained dependencies of thrust coefficient and hydrodynamic coefficient of efficiency on vibration frequency and position of the axis of angular oscillations. We have studied the influence of deformation of the ends of caudal fin model on its hydrodynamic properties. Analysis results are offered.

Keywords: bearing surface, free vortex surface, deformable thin wing, steady motion, caudal fin model, thrust coefficient, hydrodynamic coefficient of efficiency.

REFERENCES:

- [1] Fedotov A.A. *Almanakh sovremennoi nauki i obrazovaniya — Almanac of Modern Science and Education*, 2008, no. 7, pp. 225–229.
- [2] Krylov D.A., Sidnyaev N.I., Fedotov A.A. Otekanie koleblyuschegosya kryla potokom ideal'noy neszhimaemoy zhidkosti [Flow of an ideal incompressible fluid around an oscillating wing] *Trudy MGTU im. N.E. Baumana* [Bauman Moscow State Technical University Proceedings], 2013, no. 608. pp. 74–92.
- [3] Romanenko E.V. *Gidrodinamika ryb i delfinov* [Hydrodynamics of fish and dolphin]. Moscow, KMK Publ., 2001, 412 p.
- [4] Romanenko E.V. *Gidrodinamika delfinov* [Hydrodynamics of fish and dolphin]. *Vestnik RFFI — RFBR Journal*, 2004, no. 3(37), pp. 5–23.
- [5] Romanenko E.V., Pushkov S.G. *Gidrodinamika delfinov, ryb i lastonogikh* [Hydrodynamics of dolphin, fish and pinnipeds]. *Collection of scientific papers «Fundamental and applied hydrophysics»*, 2008, no. 2, pp. 13–28.
- [6] Romanenko E.V. *Fish and Dolphin Swimming*. Sofia, Pensoft Publishers, 2002, 430 p.

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