

## Locomotion of a foil with a sharp edge in a fluid due to periodic controls

**Alexey Borisov, Ivan Mamaev, Evgenii Vetchanin, Alexander Kilin**

*Abstract:* This paper addresses the motion of a small boat with an oscillating rotor on a water surface. The body of the boat has the form of an airfoil with a sharp edge. For this system, experimental investigations have been carried out in which the trajectory of the boat and its orientation were filmed. To construct a mathematical model of the motion of this boat, numerical experiments were carried out on the basis of a joint numerical solution to the Navier-Stokes equations and the equations of rigid body motion.

- 
- 1) Alexey Borisov, Professor: Moscow Institute of Physics and Technology, 9 Institutskiy per., Dolgoprudny, Moscow Region, 141701, Russia (RU), borisov@rzd.ru .
  - 2) Ivan Mamaev, Professor: Kalashnikov Izhevsk State Technical University, Universitetskaya, 1, Izhevsk, 426034, Russia (RU), mamaev@rzd.ru .
  - 3) Evgenii Vetchanin, Ph.D.: Kalashnikov Izhevsk State Technical University, 426034 Izhevsk, Universitetskaya str., 1, Russia (RU), eugene186@mail.ru .
  - 4) Alexander Kilin, Professor: Udmurt State University, 426034 Izhevsk, Universitetskaya str., 1, Russia (RU), aka@rzd.ru .