TRUDY INSTITUTA MATEMATIKI I MEKHANIKI UrO RAN

Vol. 21 No. 2 **2015**

PROBLEM OF COLLISION AVOIDANCE FOR A GROUP MOTION WITH OBSTACLES

Received April 27, 2015

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The paper is devoted to the problem of coordinated control for a flock of control systems moving jointly towards a target set with the requirement of noncollision of its elements. In the present paper, we consider its subproblem, which is formulated as follows. During the motion to the target, the members of the group must stay within a virtual ellipsoidal container, which forms a reference motion ("tube"). The container avoids obstacles, which are known in advance, by means of reconfigurations. In response, the flock must rearrange itself inside the container, avoiding collisions between its members. The present paper is concerned with the behavior of the flock inside the container, when the flock coordinates its motions according to the evolution of the container.

Keywords: group control, flock, target set, ellipsoidal trajectory, reference motion, noncollision, obstacles, coordination.

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Cite this article as:
A. B. Kurzhanskii. Problem of collision avoidance for a group motion with obstacles, *Trudy Inst. Mat. Mekh. UrO RAN*, 2015, vol. 21, no. 2, pp. 134–149.