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A MULTIPLE CAPTURE OF AN EVADER IN LINEAR RECURSIVE DIFFERENTIAL GAMES

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In a finite-dimensional Euclidean space, we consider a linear nonstationary problem in which one evader is pursued by a group of players and all the participants have equal capabilities. The problem is described by the system

$$\dot{z}_i = A(t)z_i + u_i - v, \quad z_i(t_0) = z_i^0, \quad u_i, v \in V,$$

where the set of admissible controls V is a strictly convex compact set with smooth boundary. It is assumed that the fundamental matrix $\Phi(t)$ of the homogeneous system $\dot{w} = A(t)w$, $\Phi(t_0) = E$ is a Zubov recursive function and its derivative is uniformly bounded. The aim of the pursuing group is to capture the evader by at least r different pursuers. We assume that the terminal sets are convex and compact. The pursuers use quasistrategies. We obtain sufficient conditions for the solvability of the pursuit problem in terms of the initial positions. Examples are given.

Keywords: differential game, group pursuit, recursive function.

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