Optimal pursuit time for a differential game in the Hilbert space l2.

ABSTRACT

e consider a two-person zero-sum pursuit-evasion differential game in the Hilbert space l2. The control functions of the players are subject to integral constraints. It is assumed that the control resource of the pursuer is greater than that of the evader. The pursuer tries to force the state of the system towards the origin of the space l2, and the evader tries to avoid this. We give a solution to the optimal pursuit problem for the differential game. More precisely, we obtain an equation for the optimal pursuit time and construct optimal strategies for the players in an explicit form. To prove the main result we solve a time-optimal control problem.