Multi pursuer differential game of optimal approach with integral constraints on controls of players

ABSTRACT

We study a differential game of optimal approach of finite or countable number of pursuers with one evader in the Hilbert space l_2. On control functions of the players integral constraints are imposed. Such constraints arise in modeling the constraint on energy. The duration of the game d is fixed. The payoff functional is the greatest lower bound of distances between the pursuers and evader when the game is terminated. The pursuers try to minimize the payoff functional, and the evader tries to maximize it. In this paper, we find formula for the value of the game and construct explicitly optimal strategies of the players. Important point to note is that the energy resource of any pursuer needs not be greater than that of the evader.

Keyword: Control; Differential game; Integral constraint; Strategy; The value of the game