

Simple motion evasion differential game of one pursuer and one evader

ABSTRACT

We study an evasion differential game of simple motion, involving one pursuer and one evader in the plane \mathbb{R}^2 . The control functions of players are subjected to geometric constraints. Maximum speed of the pursuer is equal to 1, and maximal speed of the evader is $\alpha > 1$. Control set of the evader is a sector S whose radius is greater than 1. We say that evasion is possible if the state of the evader does not coincide with that of the pursuer at all times. The problem is to find the conditions of evasion. We obtained conditions that guarantee the evasion regardless of the location of initial position of players.

Keyword: Differential game; Geometric constraint; Evasion; Control; Strategy