

## Differential game with slow pursuers on the edge graph of a simplex

### ABSTRACT

In this paper, a differential game of kind of several pursuers and one evader is studied. All the players move only along the edges of a simplex of dimension  $d$ . The maximal speed of each pursuer is less than that of the evader. If the state of a pursuer coincides with the state of the evader, then pursuit is completed. An exact mathematical formulation of the problem is given by introducing special classes of strategies adapted for games on graphs. Sufficient conditions for completion of pursuit and possibility of evasion are obtained. In the case where the simplex is regular we obtained a condition. If this condition is satisfied, then pursuit can be completed, else evasion is possible.

**Keyword:** Graph of polyhedron; Regular simplex; Differential game; Pursuit game; Evasion game; Game in normal form; P-strategy