Introduction to differential games

Prof. Alessandra Buratto

Dipartimento di Matematica “Tullio Levi-Civita”, Università di Padova
Email: buratto@math.unipd.it

Timetable: 12 hrs. February - March 2021

Course requirements: Basic notions of Differential equations and Optimal control

Examination and grading: Homework assignments during classes + final presentation of a research paper selected from the literature on differential games

SSD: SECS-S/06

Aim: Differential games are very much motivated by applications where different agents interact exhibiting an inter-temporal aspect. Applications of differential games have proven to be a suitable methodology to study the behaviour of players (decision-makers) and to predict the outcome of such situations in many areas including engineering, economics, military, management science, biology and political science. This course aims to provide the students with some basic concepts and results in the theory of differential games.

Course contents:

• Recall of basic concepts of game theory, equilibrium (Nash ...)
• Dynamic games: formalization of a differential game
• Simultaneous and competitive differential games (Nash Equilibrium)
• Hierarchic differential games (Stackelberg equilibrium)
• Time consistency and perfectness

References: