SEMINÁŘ

Kdy: **Úterý - 5. 4. 2016 10:00-11:30**

Kde: místnost č. 203
ÚTIA AV ČR, v.v.i., Pod Vodárenskou věží 4, Praha 8

Kdo: **Prof. Konstantin E. Starkov**

National Polytechnic Institution (CITEDI), Mexico
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Title: **Dynamical Properties and Tumor Clearance Conditions for Multidimensional Models of Bladder Cancer Immunotherapy**

Abstract:

In this talk two multidimensional bladder cancer models with various types of therapy are examined. The first model is four dimensional, another model is nine dimensional. The main researching interest is twofold: finding ultimate densities of cells populations and tumor clearance conditions. We study ultimate dynamics of interactions between tumor and the immune system via finding ultimate upper and lower bounds for all variables involved into these models (densities of cells populations and concentration of treatments). Besides, the dissipativity property in the sense of Levinson is shown for both of models. Further, the global tumor clearance problem is considered as a control problem in which the treatment is chosen as a constant control satisfying some inequalities expressed in terms of model parameters. Our method is based on localization method of compact invariant sets and may be exploited for a prediction of the cells populations dynamics involved into cancer tumor models.

Short bio

Konstantin E. Starkov was born in Moscow, Russia. Up to 1996 he worked in the Institute of Control Sciences, Russian Academy of Sciences, Moscow. In 1983 he received a Candidate of Sciences Degree, in 1995 he received a Doctor of Sciences Degree in physics and mathematics. Since 1996 he works in the National Polytechnic Institution (CITEDI), Mexico in the position of a full professor.

He has leaded many institutional, national and a number of international research projects during his career. He has been a supervisor of several Ph.D Theses and Master diploma Theses. Researching interests of Dr. Starkov concern various problems of mathematical control theory and analysis of nonlinear systems. The current field of interests of Dr. Starkov includes localization analysis of compact invariant sets of various real world models including cancer tumor growth models.