

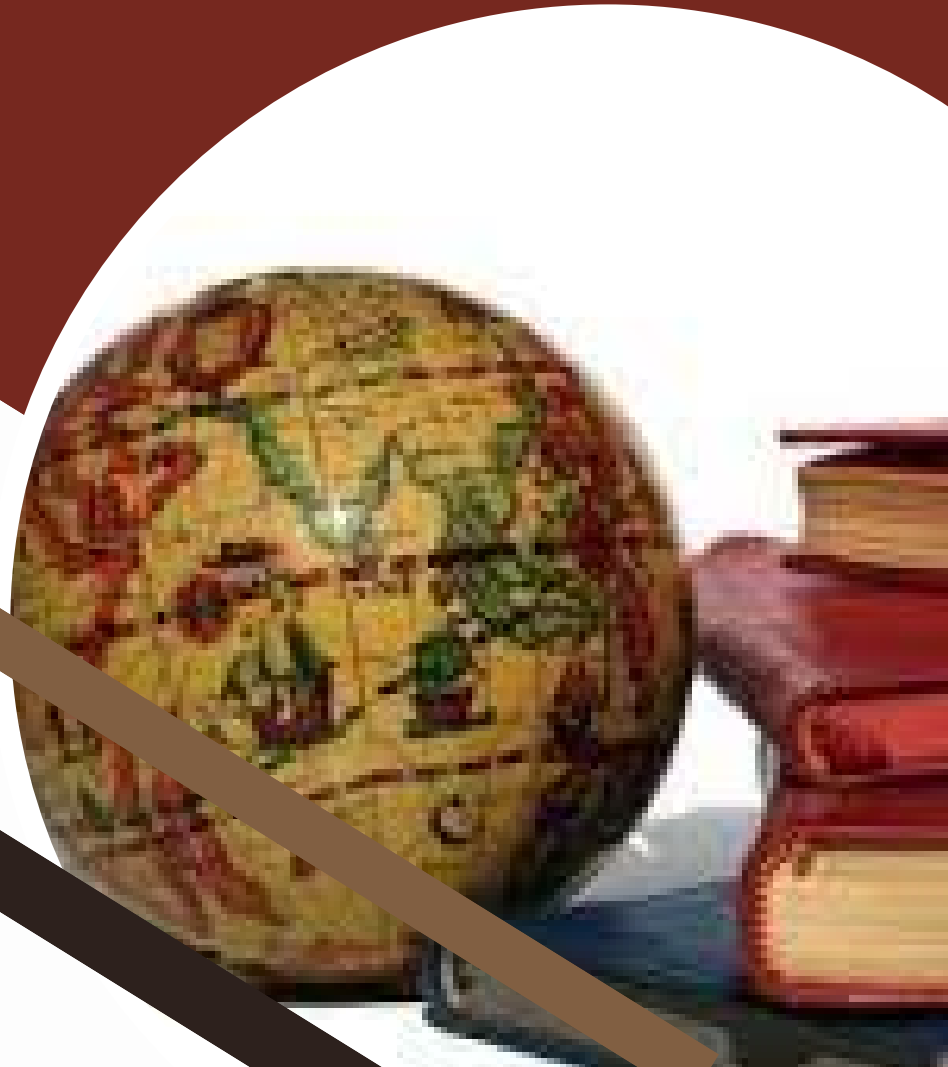
# 11. INTERNATIONAL SUMMIT SCIENTIFIC RESEARCH CONGRESS

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## ABSTRACT BOOK

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## THE NONLINEAR DYNAMICS A CANCER TUMOR GROWTH MODEL AND APPLICATION

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### ABSTRACT

In this talk, mathematical analysis of the model equations with multipoint condition, regarding dissipativity, boundedness of solutions, invariance of non-negativity, nature of equilibria, local and global stability have been investigated. We studied some features of behavior of one of the three-dimensional tumor growth models dynamics described in terms of densities of three cells populations: tumor cells, healthy host cells and effector immune cells. We have found sufficient conditions under which the trajectories from the positive domain tend to one of the equilibrium points. The addition of a drug term to the system can move the solution trajectory into a desirable basin of attraction. We show that the solutions of the model with a time-varying drug term approach can be evaluated by a more fruitful way in down to earth style. This is the solutions of the system without drug treatment, in the condition of stimulated immune processes.

**Keywords:** Cancer tumor model, Mathematical modeling, Immune system, Stability of dynamical systems, Multiphase attractors