Existence of global in time weak solutions for nonlinear models for tumor growth

Donatella Donatelli
Department of Information Engineering, Computer Science and Mathematics
University of L'Aquila, Italy
donatella.donatelli@univaq.it

Konstantina Trivisa
Department of Mathematics
University of Maryland, USA
trivisa@math.umd.edu

Abstract

We investigate the dynamics of a class of tumor growth models known as mixed models.

The key characteristic of these type of models is that the different populations of cells are continuously present everywhere in the tumor at all times. The model is given by a multi-phase flow: the densities of the different cells are governed by a set of transport equations, the density of the nutrient and the density of the drug are governed by rather general diffusion equations, while the velocity of the tumor is given by Brinkman's equation or a Darcy law.

Global-in-time weak solutions are obtained using an approach based on penalization of the boundary behavior, diffusion and viscosity in the weak formulation. Both the solutions and the domain are rather general, no symmetry assumption is required and the result holds for large initial data, see [1], [2], [3].

References

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