

Non fickian diffusion models for gliomas

J. R. Branco

*CMUC and Department of Physics and Mathematics, Coimbra Institute of Engineering, Portugal.
jrbranco@isec.pt*

J. A. Ferreira

*CMUC and Department of Mathematics, University of Coimbra, Portugal.
ferreira@mat.uc.pt*

P. de Oliveira

*CMUC and Department of Mathematics, University of Coimbra, Portugal.
poliveir@mat.uc.pt*

Abstract

Gliomas are diffusive and highly invasive brain tumors. Due to their invasive behaviour, gliomas almost always have fatal consequences, even when the usual protocol of surgical resection, radiotherapy and/or chemotherapy is used.

Although more clinical trials are necessary to determine the optimal treatment strategies, the development of mathematical models to design the therapeutic is also appropriate and timely. Carefully devised and validated, mathematical models might be useful for developing hypotheses to be tested in future clinical trials, and for optimizing the design of future trials.

The aim of this talk is to present a mathematical model for gliomas growth, characterized by an integro-differential equation with a certain memory effect, and to conclude some sufficient conditions to be verified when chemotherapy or radiation is used.

Keywords: Tumor growth, glioma, mathematical modeling, radiation, resection, chemotherapy.

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