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MATHEMATICAL MODELING OF LOW-GRADE GLIOMA GROWTH: LINEAR VS NONLINEAR DIFFUSION

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ABSTRACT

The talk is devoted to a comparative analysis of mathematical models describing the growth dynamics of low-grade gliomas (LGG). We compare classical models based on linear diffusion with more advanced approaches incorporating nonlinear diffusion, which enables a more accurate representation of brain tissue heterogeneity and complex mechanisms of tumor cell migration. Particular attention is paid to the analysis of travelling wave solutions, which make it possible to describe the propagation of the tumor front and determine its spreading speed. The aim of the study is to assess the influence of the diffusion type on tumor growth dynamics and to compare the qualitative properties of the considered models.

This is joint work with Juan Belmonte Beitia, Marek Bodnar and Monika J. Piotrowska.

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