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## **ON THE INFLUENCE OF DIFFERENT TYPES OF DELAYS ON THE DYNAMICS OF GENERALIZED TUMOUR–IMMUNE SYSTEM INTERACTIONS MODEL**

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### **ABSTRACT**

During the talk we present a generalised tumour–immune system interaction model with different types of delays. We discuss the basic model properties such as the existence, uniqueness and non-negativity of solutions of considered system as well as the existence of the steady states for both discrete and distributed delays. In particular we refer the results obtained for the model with discrete delay from [1] and compare them with new results for different kinds of distributed delays. For the particular choice of probability densities functions we investigate the stability of steady states comparing it with the results for the discrete delay case. Moreover, we present the effect of model fitting to the experimental data. We discuss the influence of model parameters on the value of the critical (average) delay that destabilises the steady state.

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### **REFERENCES**

- [1] M.J. Piotrowska: *An immune system–tumour interactions model with discrete time delay: model analysis and validation*, Communications in Nonlinear Science and Numerical Simulation **34** (2016), 185–198.