

MATHEMATICAL MODELING AND SIMULATIONS OF COVID-19

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Abstract. *A mathematical model to describe the dynamics of COVID-19 will be formulated and analyzed. Actually, in this situation mathematical models play very important role in understanding transmission dynamics and forecasting possible scenarios for the development of COVID-19 pandemic. This lecture presents the mathematical analysis, modeling, computer simulation, and visualization of the COVID-19 pandemic, based on real-world data. The presented results are prepared and published jointly with some colleagues from the FMI-University of Sofia, IICT-BAS, Institute of Molecular Biology-BAS. SEIR-based models are the most adopted deterministic models to characterize the COVID-19 dynamics and to predict possible scenarios. In this talk we explore a time-dependent generalized SEIR model with vaccination and solving so-called “inverse problem” we identify the model parameters. Based on these results we model the COVID-19 transmission dynamics in Bulgaria and make some hypotheses for the development of the epidemic. The suggested procedure can be applied to COVID-19 data in every single country of the world.*

Do you know that according to the “John Hopkings Hospital’s” diagrams, Bulgaria is at the SECOND PLACE IN THE WORLD to the mortal cases from COVID-19 (per capita)!! We will try to explain the reasons of this situation, following the predictions from our model.

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