Title: Adequate numerical simulation of some problems in physics and biology

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In in physics and biology many phenomena can be described by differential equations. Typically these continuous models cannot be solved analytically, therefore, by using some numerical method, we construct discrete models. These models should reflect the physically /biologically motivated basic qualitative properties of the original phenomena. Our aim is the analysis of these properties for different discrete models. In our talk we will consider discrete models of different processes, namely, the ehat equation process and the time-space-depending epidemic propagation (SIS, SIR models).We give conditions for the disretization parameters in the discrete models under which the models possesses the main characteristic properties. We illustrate our results with numerical examples.