

ON INVARIANT MEASURES AND CHAOTIC PROPERTIES OF THE FLOW
GENERATED BY THE MACKEY-RUDNICKI EQUATIONS

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The most important goal of mathematical modeling is to help in understanding the dynamics of the described process and in making practical predictions. This has been achieved in 1976 by A. Lasota and M. Waøewska-Czyøewska: they proposed and analyzed a model for blood cells proliferation, on a basis of which a successful treatment for therapeutically induced anemia was discovered and performed. The ideas of Lasota and Waøewska-Czyøewska were later developed by M.C.Mackey and R.Rudnicki, who considered a population model of cells that are capable of simultaneous proliferation and maturation. Mackey-Rudnicki model is described by two retarded partial differential equations (we call them the Mackey-Rudnicki equations). We are going to present that model and describe its properties. It turns out that in many cases the flow generated by the Mackey-Rudnicki equations exhibits strong chaotic properties: it admits an ergodic invariant measure, it has periodic points of any period and the set of periodic points is dense.