FIRST WORKSHOP
"DYNAMICAL SYSTEMS APPLIED TO BIOLOGY AND NATURAL SCIENCES "

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ABSTRACT | Lubor Buric

Title

"On traveling waves in a model of the spruce budworm population with dispersion"

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Abstract

We investigate a model of the spruce budworm population with dispersion. The model is given by the system of two nonlinear parabolic PDE's. We introduce a dimensionless form of the problem and study the existence of the traveling waves by means of the transformation to the moving coordinate. The resulting system of ODE's is a three-dimensional slow--fast system.
Using the techniques of the numerical bifurcation analysis we show that the system exhibits two qualitatively different modes depending on the magnitude of the wave velocity. For small wave velocities the dynamics can be quite complex and there are several types of the traveling pulses.
On the other hand, for large wave velocities we discovered a special class of the traveling waves, the so called canard traveling pulses.