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# On a logistic equation with delayed positive and negative feedbacks

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## Abstract

We consider qualitative properties of a logistic equation with two discrete delays - positive and negative delayed feedbacks. In the parameter plane we characterize the boundedness and global stability of the positive equilibrium. It is shown that there exists an unbounded exponential solution for the nonlinear problem. From the parameter plane analysis we can deduce an idea how positive and negative delayed feedbacks influence the dynamics. For a very special case we completely characterize the stability and the boundedness. It is shown that there exists a parameter set such that the solution is locally stable, but it is not globally stable due to the existence of a blow-up solution. We also consider the existence of positive (real) roots from which we can deduce a part of the instability region for the two delay problem.

This is a joint work with Yukihiro Nakata and Gergely Rost.

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