General model of a cascade of reactions with time delays: global stability analysis

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Abstract

The considered problem consists of a cascade of reactions with discrete as well as distributed delays, which arose in the context of Hes1 gene expression. For the abstract general model sufficient conditions for global stability are presented. The method is based on comparison of the behaviour of the system of delay differential equations with an appropriate discrete system. Then the abstract result is applied to the Hes1 model and the condition for global stability of the steady state is given.

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