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Study of two-nutrient model with pulsed input

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In this paper, a model of two micro-organisms competing for a single nutrient and pulsed input of toxicant is studied. The model is analyzed by the theory and small amplitude periodic solutions. The conditions for micro-organism eradication are obtained. At the same time, the conditions for the existence of a stable biological point of view, the impulsive period, and control our results are illustrated by numerical simulations.

Keywords: Chemostat; impulsive differential equation

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1. Introduction

A chemostat is a piece of vessel in which a microbial population dynamics is studied. The microbial species which are considered are assumed to be constant.

In order to identify the growth rate, nutrients are added to samples taken from the chemostat. The growth rate is measured. A point is obtained when a combination of nutrients is added. Recently, there has been a lot of interest concerning growth of micro-organisms in a chemostat.