Periodic solutions of a non-autonomous delayed discrete size-structured chemostat

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Abstract

This is a joint work with G. Robledo and D. Sepúlveda. In this talk, we shall present a model describing the dynamics between nutrient and microbial biomass structured in size classes inside a chemostat having a periodic input of nutrient. We assume the existence of a time delay between the absorption of nutrient by the biomass cells and its effects on the cell growth. Using topological methods, we shall prove the existence of periodic solutions under appropriate conditions. In particular, we shall show that, unlike in the continuous model, the presence of a delay makes it necessary to assume a stronger restriction in the function that models the consumption of the nutrient.

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