

Im

Oberseminar Analysis

hält Herr

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einen Vortrag zum Thema

Destabilization, stabilization, and multiple attractors in saturated mixotrophic environments

Abstract:

In this talk, we elucidate the dynamical consequences of the invasion of mixotrophs by the use of a model that is a limiting case the chemostat possessing explicit resource dynamics modeling. The model is a hybrid of a competition model describing the competition for resources between an autotroph and a mixotroph and a predator-prey model describing the interaction between the autotroph and a herbivore. Mixotrophic interactions are a strong component in harmful algae blooms, Hallenrath-Lehmann et. al. (2015) and the purpose of this paper is not predicting recurrent harmful algae blooms. Instead, we aim at understanding the environmental conditions allowing for mixotrophic invasions and their dynamical consequences.

It is possible for a mixotroph to invade both autotrophic environments and environments described by interactions between autotrophs and herbivores. The interaction between autotrophs and herbivores might be in equilibrium or cyclic. Our first conclusion is that it is possible for an invading mixotroph to both stabilize and destabilize autotrophs-herbivore dynamics, depending on the environmental conditions and the properties of the invading mixotroph.

Our second conclusion is that environmental conditions allowing for multiple attractors after mixotrophic invasion exist. Such initial value dependent behavior may be the consequence both after an invasion in a completely autotrophic environment and in both cyclic and equilibrium autotroph-herbivore environments.

Datum: **Montag, 11. März 2019**
Zeit: **13:00 Uhr**
Raum: **WIL C 129**

Ansprechpartner: Prof. Dr. S. Siegmund / Dr. P. Getto

Alle Interessenten sind herzlich eingeladen.