

SUMMARY

ANALISA STABILITAS MODEL PREDATOR-PREY DI DALAM KEMOSTAT DENGAN FUNGSI RESPON UMUM

STABILITY ANALYSIS OF PREDATOR-PREY MODEL IN A CHEMOSTAT WITH GENERAL RESPONSE FUNCTION

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Subject : Persamaan diferensial
Subject Alt : Differential equations
Keyword : kemostat; mangsa-pemangsa; stabilitas

Description :

Ruang pertumbuhan dalam kemostat memungkinkan terjadinya interaksi mangsa-pemangsa yang bisa dimodelkan secara matematis. Dengan adanya laju perpindahan dan fungsi respon dalam model matematis yang digambarkan, maka mengakibatkan sistem tidak

konservatif (tidak memenuhi hukum kekekalan energi). Sehingga untuk mengetahui stabilitas sistem, dilakukan melalui dua tahapan yaitu stabilitas lokal terlebih dahulu kemudian stabilitas global. Dalam menganalisa stabilitas lokal digunakan kriteria Routh-Hurwitz, dan stabilitas global dengan kondisi steady state yang bebas dari predator melalui konstruksi fungsi Liapunov. Analisa persistensi melengkapi analisa stabilitas yang dilakukan terhadap model interaksi mangsa pemangsa di dalam kemostat dengan fungsi respon umum, sehingga bisa diidentifikasi kesetimbangan sistem dalam keadaan sebenarnya.

Description Alt:

Growth medium in a chemostat enabling predator-prey interaction which can be modeled thematically. With a removal rates and response functions of used mathematical model, it caused unconservative system. To know its stability, hence divided on two

parts such as local stability then global stability. Local stability of steady states is studied by using Routh-Hurwitz criterion, and used constructing of Lyapunov function in the study of global stability, include predator-free steady state. Persistence analysis completed stability analysis of predator-prey model in a chemostat with general response functions, so could identify system balancelly state in fact.

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Thank You,

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