Mathematical Biology Seminar

Monday, February 5, 2024

3 pm MDT - 457 CAB (in person)

Join Zoom Meeting

https://ualberta-ca.zoom.us/j/98497695684?pwd=SG5pcUVRS0xucW5xd0xBTm1VVCtEUT09

Meeting ID: 984 9769 5684
Passcode: 32123

Laurence Ketchemen Tchouaga

Mathematics and Statistics

McGill University

Spatial steady state in fragmented landscapes under monostable and bistable growth dynamics.

Many biological populations reside in increasingly fragmented landscape, where habitat quality may change abruptly in space. A reaction-diffusion model for a single species population which propagates in a heterogeneous landscape in a one-dimensional space is presented. The landscape is composed of two homogeneous adjacent patches with different diffusivities and net growth functions (monostable and bistable). A coupling interface condition between the two patches is involved. We consider various combinations of the reaction term and first classify all possible positive steady state using a phase plane approach. We continue by analyzing the stability properties of the monotone positive steady state and focus on two interesting constant steady state. We end by studying how the movement behaviour can affect the overall dynamics of the population.

COLLABORATIVE MATHEMATICAL BIOLOGY GROUP

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