SEMINARIO DE ANÁLISIS NUMÉRICO Y MODELACIÓN MATEMÁTICA

GIMNAP-Departamento de Matemática, UBB
Centro de Investigación en Ingeniería Matemática (CI^{2}MA), UDEC

Expositor:

Verónica Anaya

Departamento de Matemática, Universidad del Bío-Bío

Título de la Charla:

Mathematical and numerical analysis for an indirectly transmitted disease

Fecha y Hora:
Martes 10 de Noviembre de 2015, 15:30 Horas.

Lugar:
Sala Seminario, Facultad de Ciencias
Universidad del Bío-Bío.

Resumen

This work is concerned with a model of the indirect transmission of an epidemic disease between two spatially distributed host populations having non-coincident spatial domains with nonlocal and cross-diffusion, the epidemic disease transmission occurring through a contaminated environment. The mobility of each class is assumed to be influenced by the gradient of the other classes. We address the questions of existence of weak solutions by using a regularization method. Moreover,we propose a finite volume scheme and proved the well-posedness, nonnegativity and convergence of the discrete solution. The convergence proof is based on deriving a series of a priori estimates and by using a general L^p compactness criterion. Finally, the numerical scheme is illustrated by some examples.