SEMINARIO DE ANÁLISIS NUMÉRICO Y MODELACIÓN MATEMÁTICA.

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

Expositor:

Camilo Mejías

CI^{2}MA & Departamento de Ingenieía Matemática, UdeC

Título de la Charla:

A model of continuous sedimentation with compression and reactions

Fecha y Hora:
Martes 4 de Octubre de 2016, 15:30 Horas.

Lugar:

Auditorio Alamiro Robledo, FCFM, Universidad de Concepción, Concepción.

Resumen

Continuously operated settling tanks are used for the gravity separation of solid-liquid suspensions in several industries. Mathematical models of these units form a topic for well-posedness and numerical analysis even in one space dimension due to the spatially discontinuous coefficients of the underlying strongly degenerate parabolic, nonlinear model PDE. Such a model is extended to describe the sedimentation of multi-component particles that react with several soluble constituents of the liquid phase. The fundamental balance equations contain the mass percentages of the components of the solid and liquid phases. The equations are reformulated as a system of nonlinear PDEs that can be solved consecutively in each time step by explicit numerical schemes. One such scheme combines a difference scheme for conservation laws with discontinuous flux with an approach of numerical percentage propagation for multi-component flows, and is employed to simulate three scenarios of denitrification in secondary settling tanks in wastewater treatment.

Informaciones: royarzua@ubiobio.cl y dmora@ubiobio.cl