

**Second Workshop on Hyperbolic Problems:
Theory, Numerics and Applications**
Universidad de La Frontera, sede Angol, January 8 and 9, 2026

Programme
Thursday, January 8, 2026

09.00–09.30 **Welcome**

09.30–10.00 **Eduardo Abreu** (Universidade Estadual de Campinas (UNICAMP) Brazil):

A novel Lagrangian-Eulerian approach for nonlinear hyperbolic balance laws: theory, computing and applications

10.00–10.30 **Sebastián Tapia-Mandiola** (Centre INRIA de l'Université Lille, France):

Interaction of jamitons in second-order macroscopic traffic models

10.30–11.00 **Coffee break**

11.00–11.30 **Luis Miguel Villada** (GIMNAP-Departamento de Matemática, Universidad del Bío-Bío and CI²MA, Universidad de Concepción, Concepción, Chile):

A nonlocal upstream-downstream traffic model

11.30–12.00 **Gerardo Hernández-Dueñas** (Universidad Nacional Autónoma de México, Unidad Juriquilla, Mexico):

Two-layer gas-liquid flows in pipes with general cross sections

12.00–12.30 **Fernando Campos** (CI²MA and Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción, Chile):

Inverse problem for the Shallow Water equations in the Bío Bío river geomorphological context

12.30–14.30 **Lunch** (not included)

14.30–15.00 **Yolanda Vásquez** (Universidad Tecnológica de Panamá, Panama City, Panama):

A numerical scheme for a model of a flotation column including the transport of liquid components

15.00–15.30 **Carlos Torres-Ulloa** (Universidad Católica de Temuco, Temuco, Chile):

Foam front dynamics in a porous medium: comparing Darcy flow and pressure-driven growth

15.30–16.00 **Coffee break**

16.00–16.30 **Víctor Osores** (Universidad Católica del Maule, Talca, Chile):

A multilayer shallow water model for polydisperse reactive sedimentation

- 16.30–17.00 Jaime Hernández-Bascur** (Universidad de La Frontera, Temuco, Chile):
A path-conservative scheme based on ENO-ET reconstruction for the Saint-Venant-Exner model
- 17.00–17.30 Raimund Bürger** (CI²MA and Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción, Chile):
A second-order invariant-region-preserving scheme for a transport-flow model of polydisperse sedimentation
- 18.30–19.45 Actividad social:** “La matemática del vino: una mirada lúdica a los números de las copas”

Friday, January 9, 2026

- 09.00–09.30 Mauricio Sepúlveda** (CI²MA and Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción, Chile):
Well-posedness and numerical analysis of an elapsed time model with strongly coupled neural networks
- 09.30–10.00 Oscar Rubilar** (CI²MA and Departamento de Ingeniería Matemática, Universidad de Concepción, Concepción, Chile):
Stability and Turing pattern formation in a native prey–predator system with an exotic predator: simple diffusion and PDE numerical methods
- 10.00–10.30 Rodrigo Lecaros** (Universidad Técnica Federico Santa María, Campus San Joaquín, Santiago, Chile):
Control for gravity waves
- 10.30–11.00 Coffee break**
- 11.00–11.30 Joaquín González-Monsalves** (Universidad de La Frontera, Temuco, Chile):
Hyperbolic aspects in the numerical modeling of PM2.5 transport using a reaction-diffusion-advection equation
- 11.30–12.00 Cristóbal E. Castro** (Universidad de Tarapacá, Arica, Chile):
ADER schemes for geophysical problems: well balanced, local time step and subcell resolution
- 12.00–12.30 Gino Montecinos** (Universidad de La Frontera, Temuco, Chile):
Variants for the WENO-DK reconstruction of even orders for hyperbolic PDEs
- 12.30 Closure**