



**UNIVERSIDAD CATOLICA
DE LA SANTISIMA CONCEPCION**

**SEMINARIO DEL DEPARTAMENTO DE
MATEMÁTICA Y FÍSICA APLICADAS**

FACULTAD DE INGENIERÍA

**“Modeling and Numerical schemes for
Multi-class Traffic Problems”**

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Abstract:

The multiclass Lighthill-Whitham-Richards (MCLWR) traffic model, which distinguishes N classes of drivers differing in preferential velocity, gives rise to a system of N strongly coupled, nonlinear first-order conservation laws for the local car densities Φ as a function of space and time. First, we describe a new class of anti-diffusive schemes by splitting the system of conservation laws into two different first-order quasilinear systems, the scheme is to combine the solution of the equations in a Lagrangian reference frame with an algorithm to remap the original mesh. Finally, we consider the case in which the velocities also depend on the spatial variation of Φ to account for additional effects such as drivers' reaction time and anticipation length. These corrections can be usually posed in such a way that the resulting system of partial differential equations (PDEs) has an extra, possibly strongly degenerate diffusive term.

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