



DEPARTAMENTO DE
MATEMÁTICA APLICADA



Seminario de Matemática Aplicada

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“A mathematical analysis of some hyperbolic - parabolic problems”

ABSTRACT :

We deal with the mathematical analysis of the coupling problem in a bounded domain of \mathbb{R}^n , $n \geq 1$, between a purely quasilinear first-order hyperbolic equation set on a subdomain and a parabolic one, set on its complementary.

First, we start by providing the definition of a weak solution u through an entropy inequality on the whole domain.

Then we suppose that the flux satisfies a so-called “non linear” condition. In particular this allows us to define a notion of “strong” trace for a L^1 function that fulfills the entropy inequality. Under this assumption we are able to state a uniqueness property which relies on a pointwise inequality along the interface between the two subdomains and the method of doubling the variables.

The existence result is proved via a discontinuous vanishing viscosity method.

Finally, we show an existence and uniqueness result when the flux does not fulfill the “non linear” condition, at least in a particular case.

**Organizado por el Departamento de Matemática Aplicada de la UCM,
el Grupo MOMAT y el IMI**

Fecha: 21 de octubre de 2009, a las 13.00 horas
Seminario Alberto Dou (aula 209)
Facultad de CC. Matemáticas, UCM