

## SEMINAR OF ANALYSIS

**FRIDAY 15 MARCH 2019 - ROOM: MA B1 11 at 2.15 pm**

*Prof. Laura SPINOLO (IMATI-CNR, Pavia, Italy)*

will present a seminar entitled:

« Characteristic Boundary Layers for Mixed Hyperbolic-Parabolic Systems in One Space  
Dimension »

Abstract:

I will discuss the viscous approximation of systems of conservation laws in one space dimension defined on a domain with boundary. In most cases the physically relevant viscous approximation is given by a family of mixed hyperbolic-parabolic systems: this is for instance the case of the compressible Navier-Stokes equations and of the viscous MHD equations, which in the inviscid limit formally boil down to the Euler and the inviscid MHD equations, respectively. Boundary layers are steady solutions of the mixed hyperbolic-parabolic system and provide relevant information on the transient behavior from the viscous approximation to the inviscid limit. I will discuss recent results concerning the boundary layers analysis in small total variation regimes. In particular, I will consider the so called doubly characteristic case, which is considerably more demanding from the technical viewpoint and occurs when the boundary is characteristic for both the mixed hyperbolic-parabolic system and for the limit conservation law. The analysis applies in particular to the compressible Navier-Stokes and MHD equations in Eulerian coordinates, with both positive and null conductivity. In these cases, the doubly characteristic case occurs when the fluid velocity is close to 0. The talk will be based on joint works with Stefano Bianchini.

Lausanne, February 22, 2019

**MC/ac**