# Seminar
# Nonlinear Diffusion in Madrid

*Where:*
Room **Aula 520** of the Mathematics Department of UAM.
*When:*
On **24/05/2019** at **12:30**

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**Connections between $L^1$-solutions
of Hamilton-Jacobi-Bellman equations and
$L^\infty$-solutions of convection-diffusion equations**

ABSTRACT:   It is well-known that viscosity solutions of Hamilton-Jacobi-Bellman equations and entropy solutions of convection-diffusion equations are stable in $L^\infty$ and $L^1$, respectively. Our aim is to get similar results for viscosity solutions in $L^1$ and entropy solutions in $L^\infty$. For the first equation, we identify the smallest Banach topology, stronger than $L^1$, in which we have stability for viscosity solutions. We then construct a norm such that a quasicontraction principle holds. For the second equation, we propose a new weighted $L^1$-contraction principle where we use the solutions of Hamilton-Jacobi-Bellman equations as weights. Interestingly, "any" other weight than the solution of the Hamilton-Jacobi-Bellman equation will give a worse weighted $L^1$-contraction principle. This is a joint work with Nathaël Alibaud (UBFC, France) and Espen R. Jakobsen (NTNU, Norway).

http://verso.mat.uam.es/~difusion.nolineal/seminar