

## SEMINAIRE D'ANALYSE

➤ **VENDREDI 11 MARS 2016 à 15h15 - salle CM010**

Docteur **LINDA DE CAVE** (EPFL, Suisse) donnera une conférence sur le thème:

### SINGULAR ELLIPTIC EQUATIONS WITH MEASURE DATA

*Linda Maria De Cave, EPFL, Switzerland*

We present existence and nonexistence results of distributional solutions obtained as limit of approximations for the following quasilinear elliptic problem

$$\begin{cases} -\operatorname{div}(a(x, \nabla u)) = H(u)\mu & \text{in } \Omega, \\ u = 0 & \text{on } \partial\Omega, \end{cases} \quad (1)$$

where  $\mu$  is a nonnegative bounded Radon measure on a open bounded subset  $\Omega$  of  $\mathbb{R}^N$  ( $N \geq 2$ ),  $H$  is a continuous positive function outside the origin such that  $\lim_{s \rightarrow 0^+} H(s) = +\infty$  and  $a(x, \xi) : \Omega \times \mathbb{R}^N \rightarrow \mathbb{R}^N$  is a Carathéodory function that satisfies classical Leray-Lions structure conditions with quadratic coercivity.

Problem (1) is singular since one asks the solution to be zero on the boundary of  $\Omega$  and the function  $H$  to be neither continuous nor bounded in the origin. Since we do not require any monotonicity assumption on the singular function  $H$  and we allow the datum  $\mu$  to be a general nonnegative bounded Radon measure on  $\Omega$ , we have to overcome the difficulties due to the fact that we cannot use monotonicity methods to handle the right hand side, as done in previous papers on the subject.

Joint work with F. Oliva (Sapienza Università di Roma).

Lausanne, le 11 février 2016

BD/vl