

**Nikos Katzourakis** (Reading)

**Generalised solutions for fully nonlinear systems of PDE & vectorial  
Calculus of Variations in  $L^\infty$**

**Abstract**

Calculus of Variations in  $L^\infty$  is a relatively new field initiated by G.Aronsson in the 1960s and is under active research since. Mathematically, minimising the supremum of an energy is very challenging because the equations arising as the analogues of the Euler-Lagrange equations are non-divergence, highly degenerate and even fully nonlinear. However, it provides more realistic models, as opposed to the classical case of minimisation of the average (integral). Due to fundamental difficulties, until the early 2010s the field was restricted to the scalar case. In this talk I will discuss the vectorial case, which has recently been initiated by the speaker. The analysis of the  $L^\infty$ -equations which in general have singular solutions is based on a recently proposed general duality-free PDE theory of generalised solutions for fully nonlinear systems.