Speaker: BIRZHAN AYANBAYEV

Title: Characterisation of the PDE system of vectorial Calculus of variations in L^∞ via affine variations

Abstract: *Let n, $N \in \mathbb{N}$. Given $H \in C^2(\Omega \times \mathbb{R}^N \times \mathbb{R}^{Nn})$, we consider the functional*

$$E_\infty(u, \mathcal{O}) = \big\| H(\cdot, u, Du) \big\|_{L^\infty(\mathcal{O})}, \qquad \mathcal{O} \Subset \Omega,\ u \in W^{1,\infty}_{loc}(\Omega, \mathbb{R}^N). \tag{1}$$

The associated system which plays the role of Euler-Lagrange equations in L^∞ is

$$\left\{ \begin{aligned} H_P(\cdot, u, Du) D(H_P(\cdot, u, Du)) &= 0, \\ H(\cdot, u, Du)[H_P(\cdot, u, Du)]^\perp Div(H_P(\cdot, u, Du)) &= 0, \end{aligned} \right. \tag{2}$$

where $[A]^\perp := Proj_{R(A)^\perp}$. We prove that $\mathcal{D}$-solutions to (2) can be characterised as "local minimisers" of (1) for appropriate classes of affine variations. This talk is based on recent joint work with N. Katzourakis, extending a recent result of the latter.