

# Monge and Ampère : waiting for pluripotential theory

Eleonora Di Nezza<sup>1</sup>, Tamás Darvas<sup>2</sup>, Chinh Lu<sup>3</sup>

<sup>1</sup> Laboratoire IMJ-PRG, Sorbonne Université, Paris, France

<sup>2</sup> Department of Mathematics, University of Maryland, College Park, MD, United States

<sup>3</sup> Laboratoire de Mathématiques d'Orsay, Université Paris-Saclay, Orsay, France

A fundamental problem in Kähler geometry is to look for canonical metrics on a Kähler manifold, where the word “canonical” means that the metric satisfies a curvature condition. Such geometric problem boils down to a complex non-linear PDE of Monge-Ampère type. In the last 50 years the study of the regularity of solutions of such equations (elliptic and parabolic) has motivated a lot of works. I will give a survey of what is known in this direction (also in singular settings), emphasising how the developments in pluripotential theory were crucial in order to treat (singular) complex Monge-Ampère equations.