



14th

ANNUAL



Wolff Memorial Lectures

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 UNIVERSITY OF TEXAS AT AUSTIN

6
 MARCH

9

2015

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4:00 PM

13

RM 151 SLOAN

***Regularity for the Monge-Ampère equation,
 with applications to the semigeostrophic equations***

The Monge-Ampère equation arises in connections with several problems from geometry and analysis (regularity for optimal transport maps, the Minkowski problem, the affine sphere problem, etc.), and its regularity theory has been widely studied. However, a natural question that remained open for long in the theory was the Sobolev regularity of solutions when the right hand side is merely bounded away from zero and infinity. Apart from its own interest, this question naturally arises in the theory of existence of global solutions to the semigeostrophic equations. The latter are a simple model used in meteorology to describe large scale atmospheric flows. In these lectures we will introduce the semigeostrophic equations, discuss their relation with Monge-Ampère, show how to obtain Sobolev regularity estimates, and finally prove global existence of solutions to the semigeostrophic equations.

Alessio Figalli received his master degree in mathematics from the Scuola Normale Superiore di Pisa in 2006, and earned his doctorate in 2007 under the supervision of Luigi Ambrosio at the Scuola Normale Superiore di Pisa and Cédric Villani at the École Normale Supérieure de Lyon. In 2007 he was appointed Chargé de recherche at the French National Centre for Scientific Research, in 2008 he went to the École polytechnique as Professeur Hadamard, and in 2009 he moved to the University of Texas at Austin where he currently holds the R. L. Moore Chair. He has received several prizes and awards, including the EMS Prize 2012, and he has been an invited speaker at the International Congress of Mathematicians 2014.

Questions? Please visit www.pma.caltech.edu/content/14th-annual-thomas-wolff-memorial-lecture-2015
 or call 626-395-4335

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