

MASTERCLASS

MINT

Mint

Mathematics and Interactions in Toulouse

 November 30 , 2022
14:00-17:30

 Amphi. Schwartz,
building 1R3, Institut de
mathématiques

 Open to all students.
Registration is not required.

► PROGRAM

14:00 - Radu Ignat

Maximum principle and applications

Abstract: The maximum principle started from the following idea: in dimension one, a convex continuous function on a segment achieves its maximum at the boundary. This idea has been generalized in higher dimension to solutions u of certain elliptic partial differential equations (PDEs), in particular, for harmonic functions: unless u is a constant function, the maximum of u cannot be achieved in the interior.

The aim of this lecture is to state and prove the main results concerning the maximum principle for elliptic PDEs.

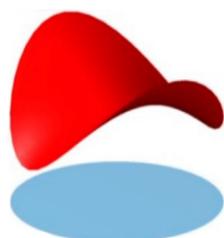
As consequences, we will review the following applications: uniqueness of solutions to elliptic PDEs, symmetry results (the moving plane method), Liouville's theorem...

Coffee Break

16:00 - Yuxin Ge

Conformal geometry and non-linear PDEs

Abstract: The classic Yamabe problem in differential geometry is to find a conformal metric with constant scalar curvature. This problem leads to the study of an elliptic partial differential equation. In this talk, we give a short survey on this topic and its generalization in fully non-linear setting. As application, we study the topology of manifolds in dimensions 3 and 4 by this generalized Yamabe problem.



Is the maximum achieved
at the boundary?

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