

Title of the internship

L1-L3 : Fine properties of functions

M1-M2 : Compactness methods

Name of the Laboratory with its address :

Institut de Mathématiques de Toulouse

Université Paul Sabatier

118, Route de Narbonne

31062 Toulouse, France

Supervisor name for the internship with his e-mail :

Mihai MARIS

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Study level for the internship L1, L2, L3 or M1, M2

Any level from L1 to M2.

The subject will be adapted to the student's knowledge and motivation.

Scientific area :

L1 – L3 : Mathematical Analysis

M1 – M2 : Mathematical Analysis & Partial Differential Equations

Duration of the internship (minimum 4 months maximum 6 months) :

Internship may start at any moment in April or May 2022.

Must end on September 30, 2022 (funds no longer available after this date).

Short abstract (4 lines maximum)

L1-L3 : The internship will focus on the study of some fine properties of functions and their applications to important function spaces.

Master : The aim of the internship is to study special solutions (ground states) of partial differential equations. The emphasis will be on acquiring some minimization and compactness methods and the subsequent tools from functional analysis.

Key words

L1 – L3 : coverings, Lebesgue differentiation, Rademacher's theorem, Lebesgue spaces, Sobolev spaces.

M1 – M2 : Sobolev spaces, concentration-compactness, compensated compactness, regularity theory, symmetry of solutions.