Ilias Ftouhi | Curriculum Vitae

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Research interests

Spectral theory of partial differential operators, partial differential equations, asymptotic analysis, convex geometry, geometric measure theory, numerical analysis and mathematical physics.
In particular shape optimization in spectral theory and sharp spectral/geometric inequalities.

Higher Education

○ **PhD of Mathematics**　　　　　　　　　　　　　　　　　　　**Sorbonne University**
Blaschke-Santaló diagrams and other shape optimization problems.　　*October 2017–Present*

Under the supervision of Professors [Antoine Henrot](#) and [Jimmy Lamboley](#) at the laboratory *Institut de Mathématiques de Jussieu-Paris Rive Gauche (IMJ-PRG)*.
PhD defense : expected in January 2021.

○ **Master of Mathematics**　　　　　　　　　　　　　　　　　**Paris Saclay University**
Applied Mathematics for Life Sciences　　　　　　　　*September 2016–September 2017*

Rank: $2^{nd}/14$

○ **Master of Mathematics**　　　　　　　　　　　　　　　　　　　**Lorraine University**
Mathématiques fondamentales et appliquées　　　　　*Septembre 2015–Septembre 2016*

Rank: $1^{st}/10$

○ **Civil Engineering degree**　　　　　　　　　　　　　　　**Ecole des Mines de Nancy**
Major: Mathematics　　　　　　　　　　　　　　　　*September 2013–September 2016*

Internships

○ **Research internship**　　　　　　　　　　　　　　　　**Paris Dauphine University**
Application of a Danskin's method to compute shape derivatives　　*Mars 2017–September 2017*
Master thesis under the supervision of Professor Jimmy Lamboley.

○ **Engineering internship**　　　　　　　　　　　　　　　　　　　　　　**Total SA**
Modelization of temperature and pressure in petrol wells　　*Mai 2016–Septembre 2016*
Final year internship at Ecole des Mines.

○ **Research internship**　　　　　　　　　　　　　　　　　**Simon Fraser University**
Numerical study of the Weyl's reminder.　　　　　　　　　*Juin 2015–Septembre 2015*
Under the supervision of Professor Nilima Nigam.

Professional occupation

- **Teaching at EEIGM Nancy (2020-2021)** (192 hours of teaching, **courses:** Analysis, Geometry and Introduction to PDEs).
- **Teaching at Sorbonne University (2017-2020)** (192 hours in 3 years, **courses:** Sequences and series of functions, Integration and Lebesgue theory, Probability).

Publications and working papers

Accepted papers

- **Blaschke-Santaló diagram for volume, perimeter and first Dirichlet eigenvalue** (2020), in collaboration with Jimmy Lamboley. Accepted for publication in *SIAM Journal on Mathematical Analysis*. [Link to the preprint]

Preprints and working papers

- **Where to place a spherical obstacle so as to maximize the first Steklov eigenvalue** (2019), submitted. [Link to the preprint]
- **Complete systems of inequalities relating the Cheeger constant, the perimeter and the area** (2020), submitted. [Link to the preprint]
- **On the Cheeger inequality for convex sets** (2020), submitted. [Link to the preprint]
- **Numerical study of convexity constraint and application to Blaschke-santaló diagrams** (2020), in completion for a soon submission.

Skills

- **Languages**: English (*full proficiency*), French (*native*), German (*notions*).
- **Programming**: Matlab (*Proficient*).

Responsibilities

- Co-organization of Phd students seminary at Institut de Mathématique de Jussieu.
- Executive member of NGO MathMaroc that aims to improve Mathematics in the Moroccan country.

Conferences and Schools

Summer School	**Cetraro, Italy**
Geometry of PDE's and related problems	*19 - 23 June, 2017*
Spring School	**Montreal, Canada**
Introduction to Spectral Theory	*1 - 7 Mai, 2018*
Days of shape optimization and applications (JOFA 2)	**Pau, France**
Meeting of french specialists in shape optimization	*7 - 8 Juin, 2018*
GdR MOA	**Pau, France**
Conference on recent advances in optimization	*17 - 19 Octobre, 2018*

ANR SHAPO Days **Grenoble, France**
Project ANR SHAPO meeting *6 - 7 Décembre, 2018*

Winter School **Toulouse, France**
Probabilty and calculus of variations *11 - 22 Février, 2019*

International Workshop for the 70th birthday of Michel Pierre **Nancy, France**
PDE: from theory to applications *25 - 27 Mars, 2019*

Annual meeting of French applied mathematicians **Morbihan, France**
SMAI Congress on applied and industrical mathematics *13 - 17 Mai, 2019*

ANR SHAPO Days **Montpellier, France**
Project ANR SHAPO meeting *12 - 14 Juin, 2019*

Shape Optimization and Isoperimetric and Functional Inequalities **Levico, Italie**
International Congress on Shape Optimization *23 - 27 Septembre, 2019*

Days of shape optimization (JOFA 4) **Palaiseau, France**
Meeting of french specialists in shape optimization *28 - 29 Octobre, 2019*