

# Mélanie Theillière

*Postdoctoral Researcher in Mathematics*

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## Previous positions

- 2020–2022 **Postdoctoral researcher**, *Department of Mathematics*, University of Luxembourg, and member of the ANR project SoS - Structures on Surfaces.
- 2019–2020 **Teacher assistant (Attachée Temporaire d'Enseignement et de Recherche)**, *Institut Camille Jordan*, Univ. Lyon, France.
- 2016–2020 **PhD in Mathematics**, *ICJ, Univ. Lyon*, France.  
*Title*: Effective Convex Integration  
*Date of the defense*: December 11th 2019  
*Jury Members*: Mélanie Bertelson, Vincent Borrelli (advisor), Patrick Massot, Klaus Niederkrüger, Boris Thibert (advisor), Anne Vaugon.

## Research area

Differential Geometry, Differential Topology,  $h$ -principle, Convex Integration Theory

## Publications

(on the left, the date of publication on arXiv)

- - - *Isometric Embeddings of the Hyperbolic plane into  $\mathbb{E}^3$*  (67 pages), co-author Vincent Borrelli, Francis Lazarus, Boris Thibert, in process of finalization but some results of this paper has already presented in a recorded conference: <https://www.youtube.com/watch?v=42QZfMBJ1wo>
- 07/09/2021 *Holonomic approximation through convex integration* (11 pages), co-author Patrick Massot, accepted at International Mathematics Research Notices
- 06/09/2020 *Corrugation Process and  $\epsilon$ -Isometric Maps* (17 pages), published at Actes du séminaire TSG de Grenoble
- 09/11/2019 *Convex Integration Theory without Integration* (35 pages), published at Math. Zeitschrift

## Invited talks

Forthcoming talk

- 18-22 July 2022 **AMS-SMF-EMS Special Session on Differential Geometry**, Grenoble, France.
- spring 2022 **Heidelberg Experimental Geometry Lab**, Hegl community seminar.
- 4 march 2022 **Laboratoire de mathématiques Blaise Pascal, Clermont-Ferrand**, Séminaire de Géométrie, algèbre, algèbres d'opérateurs.
- 16 feb. 2022 **Courant Institute, New York University**, Geometric Analysis and Topology Seminar.

## Past

2022

**Institut Elie Cartan, Nancy**, Séminaire de Géométrie Différentielle.

2021

**Harvard University**, Widely Applied Mathematics Seminar + Lecture about Corrugations in the Convex Integration Theory.

**Institute for Advanced Study, Princeton**, Workshop on the  $h$ -principle and beyond.

**Institut Montpellierain Alexander Grothendieck, Montpellier**, Darboux seminar.

**University of Luxembourg**, ANR SoS seminar.

2020

**University of Luxembourg**, Geometry and Topology seminar.

**Laboratoire de Mathématiques d'Avignon**, Séminaire de Systèmes dynamiques, Analyse et Géométrie.

**Laboratoire Mathématique Jean Leray, Nantes**, Séminaire de Géométrie.

**Laboratoire d'Analyse et de Mathématiques Appliquées, Créteil**, Geometry Day in Creteil.

**Institut Camille Jordan, Lyon**, Day of the team Algèbre-Logique-Géométrie.

2019

**Université Libre de Bruxelles**, Séminaire de géométrie.

**Institut Henri Poincaré - Orsay**, Double talk: Séminaire de géométrie, topologie, dynamique d'Orsay and workshop Symplectix.

**Institut Henri Poincaré**, Forum of Young Mathematicians, Geometry and Interactions.

**ICERM, Providence**, poster at the Workshop Illustrating Geometry and Topology.

**Laboratoire Mathématique Jean Leray, Nantes**, PhD students seminar.

**Institut Fourier, Grenoble**, Séminaire théorie spectrale et géométrie.

**Institut Fourier, Grenoble**, PhD students seminar.

2018

**Laboratoire Jean Kuntzmann, Grenoble**, Séminaire EDP.

**Institut Camille Jordan, Lyon**, Séminaire des géométries.

2017

**Institut Camille Jordan-ENS Lyon**, PhD students seminar.

[postponed due to CoVid19](#)

2022 **Geometry School, CIMPA School, Brazzaville, Congo.**

— **Workshop Convex Integration and Paradoxical Shapes, Oaxaca, Mexico.**

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## Organization of scientific events

2019-2020 **Co-organizer of the PhD students seminar**, ENS Lyon - Univ. Lyon.

2017-2018 **Co-organizer of "Inter'Actions 2018"**, *Colloquium of PhD students in applied and theoretical Mathematics*, ICJ Univ. Lyon 1.

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## Teaching

- 2020-2022 **Tutor and coordination of MathForge sessions**, (*support for students*), Univ. of Luxembourg.
- 2020-2022 **Teaching assistant**, *Bachelor in Maths, Géométrie des courbes et surfaces*, Univ. of Luxembourg.
- 2019-2020 **Teaching assistant**, *L1 Fondamentaux des maths II*, Univ. Lyon 1.
- 2018-2019 **Teaching assistant**, *L1 Fondamentaux des maths I et II*, Univ. Lyon 1.
- 2017-2018 **Teaching assistant**, *L1 Fondamentaux des maths II*, Univ. Lyon 1.
- 2011-2012 **Student Tutor**, *L1 Maths*, Univ. Jean Monnet, Saint Etienne.

## Student supervision

spring 2021 , One student for her 3rd year Bachelor thesis.

## Outreach

- 2021 **Scientific supervisor (+ reviewer of the french version) of the science comic LUX:plorations Vol.2**, *Univ. of Luxembourg*.
- 2020 **Meeting Masters students / Doctorant.e.s**, *ICJ, Lyon*.
- 2017 **Math $\alpha$ Lyon (mathematical activities on a day in hight schools)**, *3 days*.

## Languages

French (native), English

## Programming

$\LaTeX$ , C++

(and Gnuplot for 2D visualization and ParaView for the 3D visualization)

HTML/CSS, in particular webmaster of <http://hevea-project.fr/>