

Oscar Vincent Philippe COSSERAT

CNRS PhD student

LaSIE, La Rochelle Université

Office 062, Fourier Building, Av. Michel Crépeau

F-17042 La Rochelle Cedex 1 - France

Phone: +33 6 24 70 85 39

Email: oscarcosserat@gmail.com

[Personal homepage](#)¹

[arXiv page](#)²

POSITION

2020–2023 CNRS PhD student at La Rochelle Université

Graded geometry and numerical methods

co-supervised by Camille Laurent-Gengoux and Vladimir Salnikov.

Part of the CNRS [GraNum](#) Project.

EDUCATION

2019 – 2020 Master MATH, Paris Sciences et Lettres

at Paris-Dauphine, Observatoire de Paris, UPMC

Hamiltonian systems, dynamical systems, ergodic theory, stochastic calculus

Master thesis : [Existence, construction et obstruction à la globalisation des coordonnées action-angle](#), directed by Pr. Jean-Pierre Marco (Analyse algébrique, UPMC)

2018 Master 1 at Humboldt-Universität, Berlin

Non-linear analysis, variational calculus, stochastic calculus, Riemann surfaces, algebraic number theory

2017 Bachelor CPES, Paris Sciences et Lettres

Initiation to research.

Bachelor thesis : [Lemme du col et application en chimie quantique](#) directed by Mr. David Gontier (CEREMADE)

2017 Bachelor at Université Paris-Dauphine

Numerical analysis, differential calculus, functional analysis, linear algebra, Galois theory, multidimensional probability, computer science

GRANTS AND AWARDS

- [Second prize of the jury, National final, "Ma Thèse en 180 Secondes"](#)
- Grant for an invitation at [the Poisson 2022 Advanced School](#)

- Grant for an invitation at the [Poisson 2022 Conference](#)

FUNDED RESEARCH PROJECTS AND PROGRAMS

- PhD mobility program at Göttingen Mathematisches Institut, June–August 2023.
- PHC Procope, 2022-2023.
- CNRS project [Graded Geometry and Numerical Methods](#), 2020-2023.

PUBLICATIONS

In refereed journals

- O. Cosserat, *Symplectic Groupoids for Poisson Integrators*, Journal of Geometry and Physics 186, April 2023, 104751.
<https://doi.org/10.1016/j.geomphys.2023.104751>
- O. Cosserat, A. Kotov, C. Laurent-Gengoux, L. Ryvkin, V. Salnikov, *On Dirac structures admitting a variational approach*, [to appear](#) in Mathematics and Mechanics of Complex Systems.
<https://arxiv.org/abs/2109.00313>

Submitted

- O. Cosserat, C. Laurent-Gengoux, V. Salnikov, *Numerical Methods in Poisson Geometry and their Application to Mechanics*, submitted
<https://arxiv.org/abs/2303.15883>

Refereed proceedings

- O. Cosserat, C. Laurent-Gengoux, V. Salnikov, *Intégrateurs Géométriques en Géométrie de Poisson*, 25ème Congrès Français de Mécanique, Aug 2022, Nantes, France.

Work in progress

- O. Cosserat, A. Falaize, V. Salnikov, *On automatic generation of Poisson numerical methods of higher order*, in preparation.

LANGUAGES

- French: native
- English: Spoken : fair – Written : good
- German: Spoken : good

PROGRAMMING LANGUAGES

- Good level: Python
- Good level: Latex
- Intermediate level: Java, Matlab, RStudio

TEACHING ACTIVITIES

2023	La Rochelle Université, Teaching assistant in 1 st year of Civil Engineering Bachelor <i>Integral calculus and differential equations</i>
2022	La Rochelle Université, Teaching assistant in 1 st year of Mathematics Bachelor
2021	La Rochelle Université, Teaching assistant, 3 rd year of Civil Engineering Bachelor <i>Tensor analysis, Fourier series and Laplace transform</i>
2021	Exercise session of Quiberon CNRS Summer school <i>Differential geometry in mechanics: curvature of surfaces</i>
2018	Oral sessions of mathematics in "Classes préparatoires" Lavoisier, Paris

COLLECTIVE RESPONSABILITIES

2023	Co-organizer of La Rochelle Poisson Conference 2023
2022	Elected PhD students representative at the Research Committee of La Rochelle Université

SCIENCE OUTREACH

May 2023	Member of the AKMA oceanographic expedition Literary project between the doctoral school of La Rochelle Université and La Maison de l'Étudiant aiming at relating the mission and explaining fluid dynamics with poetry
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Radios

June 2022	La Méthode Scientifique , France Culture
May 2022	L'invité de France Bleu La Rochelle , France Bleu La Rochelle

Newspapers

- June 2022 [Ma thèse en 180 secondes : le doctorant rochelais finit 2e de la finale nationale](#), Sud-Ouest
- May 2022 [Charente-Maritime : c'est le grand jour pour le Rochelais Oscar Cosserat, en finale du concours Ma thèse en 180 secondes](#), Sud-Ouest
- March 2022 [Talence : le Rochelais Oscar Cosserat premier prix de la finale régionale de « Ma thèse en 180 secondes »](#), Sud-Ouest

Internet

- May 2022 [Rencontre avec Oscar Cosserat, deuxième prix du jury de MT180](#), Institut des Sciences et de l'Ingénierie des Systèmes, CNRS

Meeting

- 2022 ["Cordées de la réussite"](#), meeting with high-school students promoting research and PhD

COMMUNICATIONS

Conferences

- [Intégrateurs géométriques en géométrie de Poisson](#), CFM, Nantes, August 2022.
- [Symplectic groupoids for Poisson integrators](#), Higher Structures and Field Theory, ESI, Vienna, Austria, August 2022.
- Geometric Integrators in Poisson geometry, Margaux PhD Days, Bordeaux, May 2022.

Seminars

- [Poisson geometry and applications in numerical analysis](#), Analysis Seminar of Institut de Recherche Mathématique de Rennes, March 2023.
- [Poisson geometry and applications in numerical analysis](#), PhD Seminar of Institut Élie Cartan de Lorraine, Metz, March 2023.
- [Multiplicative groupoids for numerical analysis in theoretical mechanics](#), Geometry, Mechanics and Control Seminar (online), Instituto de Ciencias Matemáticas, Madrid, Spain, March 2023.

- Poisson geometry : theory, examples and applications in numerical analysis, LaSIE seminary, La Rochelle, March 2023.

CNRS Research Regroupement “Differential Geometry and Mechanics”

- [Perturbative Dynamics and Backward Analysis](#), ENS Paris-Saclay, November 2022.
- [Geometric Integrators in Poisson geometry](#), Bordeaux, June 2022.
- [Discretization of Poisson Structures](#), La Rochelle, June 2021.

Talks in schools, workshops and meetings

- [Hamiltonian dynamics and multiplicative groupoids](#), 2023 Winter School in Mathematical Physics, Les Diablerets, Switzerland, January 2023.
- [Hamiltonian systems and multiplicative groupoids](#), Atelier on Higher Structures in Differential Geometry, Lyon, December 2022.
- On the geometry of isotropic bisections of a presymplectic groupoid, Göttingen Universität, Germany, October 2022.

Working group at LaSIE

- Poisson integrators, February 2022.
- "Lie groupoids and algebroids applied to the study of uniformity and homogeneity of material bodies", January 2021.
- Integrable Hamiltonian systems, October 2020.

CONFERENCES, WORKSHOPS, SCHOOLS AND MEETINGS

- Thematic trimester at IHP [Higher Structures in Geometry and Mathematical Physics](#), IHP, Paris, May 2023.
- CIRM-IHP Program Research School [Higher Structures in Geometry and Mathematical Physics](#), CIRM, Marseille, April 2023.
- Göttingen Mathematisches Institut, Göttingen, October 2022.
- [Poisson 2022 Conference](#), ICMAT Madrid, July 2022.
- Summer school [Advanced Poisson School](#), CRM, Barcelona, July 2022.
- CNRS Summer school [Champs de Phases en Mécanique](#), Quiberon, Septembre 2022.
- Winter school "Foliations, pseudodifferential operators and groupoids", University of Göttingen, March 2022.
- Winter school "Lie Theory and Poisson Geometry", CIRM, January 2022.
- Poisson meeting 2020, La Rochelle, October 2021.

- CNRS Summer school [Differential geometry in mechanics](#), Quiberon, Septembre 2021.
- Summer school "Geometry for Higher Spin Gravity: Conformal Structures, PDEs, and Q-manifolds", Erwin Schrödinger Institute for Mathematics and Physics (ESI), Vienna, August 2021.
- Graded geometry and numerical methods 2.0, IHP, Paris, October 2021.
- CNRS Summer school ["Méthodes Probabilistes et Stochastiques en Mécanique"](#), Quiberon, Septembre 2020.
- GraNum meeting, La Rochelle, August 2020.