Curriculum Vitae

Personal information

Name: Luca Accornero
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Research profile

I am a differential geometer. My main areas of expertise are the theory of Lie groupoids and multiplicative structures, Poisson geometry, and the geometry of PDEs. Currently, one of my main interests are differentiable stacks and higher structures in differential geometry. I am also interested in differential topology, more precisely in the topology of hyperplane fields on manifolds. Furthermore, I am interested in the geometric formulation of classical field theories.

From October 2021 to September 2022 I worked as a risk modeller for a major Dutch bank. My job consisted in building, testing, and maintaining predictive models for the financial risk of the institution.

Publications and manuscripts in preparation

Peer reviewed.

- Accornero, L. and Palese, M. "Symmetry transformations of extremals and higher conserved quantities: Invariant Yang–Mills connections". In: *Journal of Mathematical Physics* 62.4 (2021), 043504. DOI: {10.1063/5.0038533}

- Accornero, L. and Palese, M. "The Jacobi morphism and the Hessian in higher order field theory; with applications to a Yang–Mills theory on a Minkowskian background". In: *International Journal of Geometric Methods in Modern Physics* 17.08 (2020), 2050114. ISSN: 1793-6977. DOI: {10.1142/s0219887820501145}

- Accornero, L. and Crainic, M. "Haefliger's differentiable cohomology". In: *Journal of Noncommutative Geometry* (2023), accepted. arXiv: {2012.07777} (math.DG)

Preprints.

- Accornero, L. and Cattafi, F. *A groupoid approach to transitive differential geometry*. 2022. arXiv: {2211.16639} (math.DG)

- Accornero, L. and Cattafi, F. *Pseudogroups of symmetries and Morita equivalences*. 2022. arXiv: {2211.01319} (math.DG)

In preparation.

- Accornero L., Gironella F. del Pino Gómez Á., Toussaint L., "Horizontal Morse Theory"

- Accornero L., Cattafi F., Crainic M., Salazar M.A., "Pseudogroups and geometric structures"

Work experience

MPIM Bonn   2023 Oct-2024 Sept
Postdoc
> I am a postdoctoral fellow at the Max Planck Institute for Mathematics in Bonn.

KU Leuven   2022 Oct-2023 Sept
EOS Postdoc
> I have been a postdoctoral researcher at KU Leuven, within the Geometry section. The position was funded by a grant within the Excellence Of Science (EOS) programme. My supervisor was Marco Zambon.

De Volksbank   2021 Oct-2022 Sept
Risk modeller
> I have been part of the risk modelling team at de Volksbank, the Netherlands.

Universiteit Utrecht   2017 Fall-2021 Fall
Ph.D. in Mathematics
> 4-years Ph.D. position supported by the Utrecht Geometry Centre and supervised by Marius Crainic.

Education

Ph.D. in Mathematics   2017 Fall-2021 Fall
Universiteit Utrecht

- Thesis title:
  Topics on Lie pseudogroups: Pfaffian groups, Haefliger cohomology and natural bundles.

Master's degree in Mathematics (with honours)   2015 Fall - 2017 Summer
Università degli Studi di Torino

- Thesis title:
  Jet prolongations and calculus of variations: second and higher order variations in the framework of the variational sequence.

Bachelor's degree in Mathematics (with honours)   2012 Fall - 2015 Summer
Università degli Studi di Torino

Awards

Silver medal and Luciana Picco Botta award   2019
Università degli Studi di Torino and Department of Mathematics "Giuseppe Peano"
> Awarded for the best master thesis in mathematics from my graduation year.

Collegio Universitario "Renato Einaudi" scholarship   2016
Collegio Universitario "Renato Einaudi"
> Awarded on the basis of my Master's track record.

Sergio Console award   2016
Department of Mathematics "Giuseppe Peano"
> Awarded for the best Bachelor's thesis in geometry from my graduation year.

Agrati industrial group scolarship   2016
Agrati industrial group
> Awarded for the best Bachelor's track among children of the Agrati group's employees.

Talks

Chern-Weil characteristic classes for principal groupoid bundles (*poster presentation*)
Oct 31 2023 - Nov 3 2023
Atelier on Higher Structures in Differential Geometry. Lyon, France

Natural bundles as actions of étale stacks May 31 2023
Calculus of Variations and Field Theories. Torino, Italy

Jacobi geometry and deformations of foliations Dec 22 2022
Welcome Home 2022. Torino, Italy

Symmetries and cohomological invariants in differential geometry - a Lie groupoid approach Nov 4 2022
Higher Geometric Structures along the Lower Rhine. Nijmegen, The Netherlands

Cartan geometries and Lie groupoids II Jun 1 2022
Geometric methods in physics. Torino, Italy

Haefliger's differentiable cohomology Sept 4 2020
Friday Fish Seminar Online Edition. Utrecht, The Netherlands

Cohomology of Haefliger groupoids and characteristic invariants of pseudogroups structures Sept 3 2019
Differential Geometry and its Applications. Hradec Králové, Czech Republic

Morse theory along Bracket generating distributions Dec 19 2019
Welcome Home 2019. Torino, Italy

Geometric structures via Pfaffian groupoids Dec 21 2018
Welcome Home 2018. Torino, Italy

Organizational activities

Pure and Applied Differential Geometry - PADGE July 10 - 14 2023
KU Leuven

> The PADGE conferences are organized by the KU Leuven Geometry Section approximately every five years and are dedicated to the memory of Franki Dillen (1963-2013).

Poisson seminars Feb 02 2022 - May 30 2023
KU Leuven

> I was coordinator, together with Karandeep Singh, of the seminar of the symplectic geometry section at KU Leuven.

Equivariant cohomology Oct 01 2018 - Apr 30 2019
Universiteit Utrecht

> I organized, together with my colleagues Maarten Mol and Sergej Monavari, a reading seminar on equivariant cohomology.

Exterior differential systems Feb 03 2018 - May 28 2018
Universiteit Utrecht

> I organized, together with my colleague Francesco Cattafi, a reading seminar on exterior differential systems.

Teaching experience

Master thesis – Lisa Sasso 2023
Second reader

> I am the second reader for the Master thesis of Lisa Sasso at KU Leuven.

Master seminar in differential geometry Spring 2020

Main organizer

> I was the coordinator of a seminar on the h-cobordism theorem aimed at master students. The seminar took place at Utrecht University.

Mastermath course "Poisson geometry"   Fall 2019

TA (Master level, advanced)

> I was the teaching assistant for the second level Mastermath course "Poisson Geometry", which took place at Utrecht University.

Bachelor level courses   2012-2021

TA (Bachelor level)

> During my Ph.D. in Utrecht, I have been teaching assistant at Bachelor level (10 courses in total).

Participation to conferences and workshops

**Higher Structures in Geometry
and Mathematical Physics**   Apr 17 - 21 2023
CIRM Luminy, France

Atelier on higher structures in differential geometry   Dec 07 - 09 2022
Lyon, France

Poisson 2022 conference   Jul 25 - 29 2022
Madrid, Spain

Global Poisson Webinar   Ongoing
Online

**A finite and infinite-dimensional meeting on Lie groupoids,
Poisson geometry and integrability**   Aug 16 - 20 2021
Vienna, Austria

Friday Fish Seminar - Online Edition   Spring 2020 - Summer 2021
Online

**15th Young researchers workshop in Geometry,
Mechanics and Control**   Nov 30 - Dec 04 2020
Online

Junior Global Poisson Workshop   Sept 14 - 16 2020
Online

**14th Workshop on Symplectic geometry,
Contact geometry and Interactions (CAST)**   Feb 6 - 8 2020
Antwerpen, Belgium

International Conference on Poisson geometry   Dec 9 - 13 2019
Rio de Janeiro, Brazil

Workshop on contact and Poisson geometry   Oct 31 - Nov 2 2019
Timişoara, Romania

Differential Geometry and its Applications   Sept 2 - 6 2019
Hradec Králové, Czech Republic

Workshop on singular foliations   May 13 - 14 2019
Leuven, Belgium

Poisson aan de Waal   Sept 12 - 14 2018
Nijmengen, The Netherlands

Poisson 2018 conference   Sept 16 - 20 2018
Toronto, Canada

A century of Noether theorems   May 9 2018

Torino, Italy
Lie pseudogroups: old and new   Sept 2 - 4 2017
Utrecht, The Netherlands
Differential Geometry and its Applications   Jul 18 - 22 2016
Brno, Czech Republic