

Christian El Emam

Curriculum Vitae

Personal Information

First name Christian
Last name El Emam
Date and place of birth 06/11/1993 in Sesto San Giovanni (Italy)
Nationality Italian

Current and incoming positions

From November 2024 **Postdoctoral researcher**, *Università di Torino*
Supervisor: Prof. Andrea Seppi
January 2021 - **Postdoctoral researcher**, *University of Luxembourg*
October 2024 Supervisor: Prof. Jean-Marc Schlenker

Education

Oct. 2020 - Dec. 2020 **Research and development specialist**, *University of Luxembourg*
Supervisor: Prof. Jean-Marc Schlenker
December 2020 **PhD in Mathematics**, *University of Pavia*
Thesis title: *Immersions of surfaces into $SL(2, \mathbb{C})$ and into the space of geodesics of the hyperbolic space.*
Advisor: Prof. Francesco Bonsante.
October 2017 **M.Sc. in Mathematics cum laude**, *University of Milan*
Thesis title: *Fenchel-Nielsen coordinates for Teichmüller space.*
Advisor: Prof. Francesco Bonsante. Co-Advisor: Prof. Gilberto Bini.
Sept. 2016 - Feb. 2017 **Erasmus stay**, at *Universidad Complutense of Madrid*, Master program "*Matemáticas Avanzadas*"
September 2015 **Bc. in Mathematics cum laude**, *University of Milan*
July 2010 **Scientific high school diploma**, *Liceo Scientifico "Giulio Casiraghi"*, Cinisello Balsamo (Milan)

Research Interests

Geometric structures on surfaces, hyperbolic geometry, immersions of hypersurfaces in space forms, higher Teichmüller theory, transition geometry.

Papers

- 2024 (with N. Sagman) "Holomorphic dependence of the Beltrami equation in Sobolev spaces" *submitted*, *arXiv:2410.06175*. [12 pages]
- 2024 (with N. Sagman) "On a Bers theorem for $SL(3, \mathbb{C})$ " *submitted*, *arXiv:2406.15287*. [79 pages]

- In progress (with F. Mazzoli, A. Seppi, A. Tamburelli) "A null-hyperKähler structure on the space of minimal surfaces in the Half-Pipe 3-space"
- 2023 "A metric uniformization model for the Quasi-Fuchsian space", *submitted*, [arXiv:2307.07388](https://arxiv.org/abs/2307.07388). [45 pages]
- 2022 (with A. Seppi) "Rigidity of minimal Lagrangian diffeomorphisms between spherical cone surfaces", *Journal de l'École polytechnique — Mathématiques*. [20 pages]
- 2022 (with A. Seppi) "On the Gauss map of equivariant immersions in hyperbolic space", *Journal of Topology*, 15: 238-301. <https://doi.org/10.1112/topo.12225>. [64 pages]
- 2021 (with F. Bonsante) "On immersions of surfaces in $SL(2, \mathbb{C})$ and geometric consequences", *International Mathematics Research Notices*, 2021; *rnab189*, <https://doi.org/10.1093/imrn/rnab189>. [62 pages]
- 2020 "On $PSL(2, \mathbb{C})$ and on the space of geodesics of \mathbb{H}^3 as Riemannian holomorphic manifolds", *Actes du séminaire Théorie Spectrale et Géométrie of Institut Fourier, Volume 35 (2017-2019)*, p. 9-21. [12 pages]

PhD Thesis

- 2020 PhD Thesis: "Immersions of surfaces into $SL(2, \mathbb{C})$ and into the space of geodesics of Hyperbolic space".

Given and upcoming talks

- tbd Montpellier
- 11/2024 "On a Bers Theorem for $SL(3, \mathbb{C})$ ", MPI Leipzig.
- 04/2024 "On a Bers Theorem for $SL(3, \mathbb{C})$ ", Submanifolds of locally symmetric spaces: geometric, analytic and dynamical aspects, Autrans.
- 05/2023 "A metric uniformization of quasi-Fuchsian space", Luxembourg.
- 02/2023 "The holomorphic extension of the Weil-Petersson metric to the quasi-Fuchsian space", Nice.
- 07/2022 "Minimal Lagrangian maps between closed spherical cone surfaces are isometries", AMS-EMS-SMF 2022 congress, Grenoble.
- 06/2022 "Le mappe minimali lagrangiane tra superfici sferiche chiuse sono isometrie.", Pavia.
- 30/03/2021 "Immersions of surfaces into $SL(2, \mathbb{C})$ as an approach to transition geometry", Florida State University [telematic].
- 9/02/2021 "Families of equivariant immersions in \mathbb{H}^3 with holomorphic holonomy", Pangolin seminar [telematic: [link to the video](#)].
- 05/06/2020 "Che forma ha un mondo perfetto? Un approccio alle varietà Riemanniane con molte simmetrie", Se mi narri di Matematica, University of Pavia [telematic: [link to the video](#)].
- 21/10/2019 "On immersions of surfaces into $PSL(2, \mathbb{C})$ and on a tool for constructing holomorphic maps into its character variety", Geometry and Topology seminar, University of Luxembourg.
- 18/04/2019 "On immersions of surfaces into the space of geodesics of \mathbb{H}^3 : a link between complex-valued metrics and projective structures", Séminaire de théorie spectral et géométrie, Institut Fourier, Grenoble.
- 26/11/2018 "On immersions of surfaces in $PSL(2, \mathbb{C})$ and on orthogonal structures on the complexified tangent bundle of surfaces", Geometry and Topology seminar, University of Luxembourg.

Events and seminar organization

- April-May 2025 **Co-organizer of the conference** "Leaning towards higher rank" in Pisa
- 28/08-01/09/2023 **Co-organizer of the summer school** "Metrics on higher Teichmüller spaces" in Fréjus.
- 24-26/01/2022 **Co-organizer of the conference** "Geometry Winter Workshop in Luxembourg" at the University of Luxembourg,
- 2021-June 2024 **Co-organizer of the "Geometry and Topology seminar"** at the Mathematics Department of the University of Luxembourg.
- 12/05/2020 **Co-organizer of the event** "*International Women in Mathematics Day*" at the Mathematics Department of the University of Pavia.
- 2020 **Co-organizer and co-founder of the PhD seminar** "*Se mi narri di Matematica*" at the Mathematics Department of the University of Pavia.

Thesis supervision

- 2022 **Bachelor final seminar supervision:** "*The hairy ball theorem and Brouwer fixed-point theorem*", Aleksandra Frania.
- 2021 **Bachelor thesis:** "*Borsuk-Ulam theorem and applications*", Yanis Bosch.

Research visits

- April-May 2019 Institut Fourier, Grenoble.
- October 2020 Mathematics Department, University of Luxembourg.

Teaching activities

- A. Y. 2023-2024 **University of Luxembourg**, *Exercise class: "Analysis 1"*, Bc. in Physics
- A. Y. 2022-2023 **University of Luxembourg**, *Exercise class: "Analysis 1"*, Bc. in Physics
- A. Y. 2021-2022 **University of Luxembourg**, *Main course: "Numerical Analysis for Physicists"*, Bc. in Physics
- A. Y. 2021-2022 **University of Luxembourg**, *Exercise class: "Partial differential equations 1"*, M.Sc. in Mathematics
- A. Y. 2020-2021 **University of Luxembourg**, *Exercise class: "Analysis 2"*, Bc. in Mathematics
- A. Y. 2019-2020 **University of Pavia**, *Exercise class: "Analysis 1"*, Bc. in Engineering
- A. Y. 2018-2019 **University of Pavia**, *Lectures of "Preparation for first-year students in Mathematics"*, Bc. in Mathematics
- A. Y. 2017-2018 **University of Milan**, *Exercise class: "Geometry 4"*, Bc. in Mathematics
- A. Y. 2016-2017 **University of Milan**, *Exercise class: "Geometry 1"*, Bc. in Mathematics

Language Skills

- Italian native speaker
- English advanced
- Spanish very good (aunque estoy un poco oxidado)
- French good