

# COSIMO FLAVI

Ph.D. Student | Dipartimento di Matematica | Alma Mater Studiorum – Università di Bologna

## PERSONAL DETAILS

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**Indirizzo:** Dipartimento di Matematica, Piazza di Porta San Donato 5, Bologna 40126.

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**Google Scholar:** <https://scholar.google.com/citations?user=6BB86V8AAAAJ&hl=it&oi=ao>

## EDUCATION

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### Ph.D. in Mathematics

Nov 2019 – current

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Research areas:** algebraic geometry, multilinear algebra, tensor decomposition.
- **Advisors:** Prof. Alessandro Gimigliano (Alma Mater Studiorum – Università di Bologna), Prof. Giorgio Ottaviani (Università degli Studi di Firenze).

### Master's degree in Mathematics (LM-40)

Mar 2016 – Jul 2019

*Università degli Studi di Firenze*

*Florence, Italy*

- **Graduation:** July 17<sup>th</sup>, 2019.
- **Final mark:** 110/110 e lode.
- **Advisor:** Prof. Daniele Angella (Università degli Studi di Firenze).
- **Thesis:** Struttura algebrica di complessi di forme differenziali su varietà olomorfe (*Algebraic structure of complexes of differential forms on complex manifolds*).
- **Subject:** complex geometry.

### Bachelor's degree in Mathematics (L-35)

Sep 2012 – Mar 2016

*Università degli Studi di Firenze*

*Florence, Italy*

- **Graduation:** March 1<sup>st</sup>, 2016.
- **Final mark:** 110/110 e lode.
- **Advisor:** Prof. Fabio Vlacci (Università degli Studi di Trieste).
- **Thesis:** Il teorema di Runge: approssimazione di funzioni olomorfe mediante funzioni razionali (*Runge's theorem: approximation of holomorphic functions by rational functions*).
- **Subject:** complex analysis.

### Secondary high school diploma in scientific studies

Sep 2007 – Jul 2012

*Liceo scientifico "Piero Gobetti"*

*Bagno a Ripoli (Florence), Italy*

- **Graduation:** July 1<sup>st</sup>, 2012.
- **Final mark:** 91/100.

## COMPLEMENTARY TRAINING ACTIVITIES

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### Algebra of Tensors and Applications

May 2022

*Università degli Studi di Siena*

*Siena, Italy*

- **Organizers:** Dipartimento di Ingegneria dell'informazione e Scienze matematiche.
- **Description:** Ph.D. course held by Prof. Luke Oeding (Auburn University) (held both online and in-person, due to the COVID-19 pandemic).
- **Topics:** tensor spaces and coordinate systems; symmetries in tensor calculus; computational methods in tensor spaces; applications to artificial neural networks; applications to computer vision; applications to quantum information theory.
- **Duration:** 20 hours.

### Summer courses in Mathematics

Jul 2021 – Aug 2021

*Università degli Studi di Perugia*

*Perugia, Italia*

- **Organizers:** Scuola Matematica Interuniversitaria (SMI).

- **Description:** programme of summer course based on introductory topics for research purposes in the various fields of mathematics, aimed at new graduates or students interested in research (entirely held online, due to the COVID-19 pandemic).

## Tensor Methods and Emerging Applications to the Physical and Data Sciences

Mar 2021 – Jun 2021

*University of California, Los Angeles*

*Los Angeles (CA), United States*

- **Organizers:** Institute for Pure and Applied Mathematics (IPAM).
- **Description:** three-month long programme based on training activities, such as workshops, seminars and discussion groups, related to research in multilinear algebra and its applications (entirely held in online mode, due to the COVID-19 pandemic).

## VISITS

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### Visiting Ph.D. student

Feb 2022 – May 2022

*Universidad Complutense de Madrid*

*Madrid, Spain*

- **Descrizione:** stay at the Facultad de Ciencias Matemáticas for a scientific research collaboration with Prof. Enrique Arrondo (Universidad Complutense de Madrid).

## TEACHING EXPERIENCE

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### Teaching tutor

Sep 2021 – current

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Course:** Geometria e Algebra T [29228].
- **Degree programme:** Mechanical Engineering.
- **Academic year:** 2021-2022.
- **Duration:** 30 ore.

### Teaching tutor

Sep 2021 – current

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Insegnamento:** Geometria e Algebra T-A [28570].
- **Degree programme:** Engineering Management.
- **Academic year:** 2021-2022.
- **Duration:** 30 ore.

### Teaching tutor

Feb 2021 – Sep 2021

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Course:** Algebra e Geometria [58414].
- **Degree programme:** Information Science.
- **Academic year:** 2020-2021.
- **Duration:** 20 hours.

### Teaching tutor

Feb 2021 – Jul 2021

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Course:** Algebra Lineare [66876].
- **Degree programme:** Information Science for Management.
- **Academic year:** 2020-2021.
- **Duration:** 25 hours.

### Teaching tutor

Nov 2020 – Sep 2021

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Course:** Geometria e Algebra T-A [28570].
- **Degree programme:** Engineering Management.
- **Academic year:** 2020-2021.
- **Duration:** 30 hours.

### Teaching tutor

Nov 2019 – Jul 2020

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Course:** Geometria 1A [81855].
- **Degree programme:** Mathematics.

- **Academic year:** 2019-2020.
- **Duration:** 30 hours.

### Teaching tutor

Nov 2018 – Oct 2019

*Università degli Studi di Firenze*

*Florence, Italy*

- **Courses:** Algebra I [B005473], Analisi I [B005474], Analisi I: Calcolo Differenziale ed Integrale [B006801], Geometria [B006502], Geometria I [B005475].
- **Degree programmes:** Computer Science, Mathematics, Physics.
- **Academic year:** 2018-2019.
- **Duration:** 189 hours.

### Teaching tutor

Nov 2017 – Oct 2018

*Università degli Studi di Firenze*

*Florence, Italy*

- **Courses:** Algebra I [B005473], Analisi I [B005474], Geometria I [B005475].
- **Degree programme:** Mathematics.
- **Academic year:** 2017-2018.
- **Duration:** 200 hours.

## PUBLICATIONS

**On the Frölicher spectral sequence of the Iwasawa manifold and its small deformations** 1  
*Riv. Math. Univ. Parma (N.S.)* 11 (2020), no. 2, 283-292.

## MAIN SEMINARS ACTIVITIES

**On the rank of powers of a non-degenerate quadratic form** Jun 2022

*Universitat Jaume I*

*Castellón de la Plana, Spain*

- **Descrizione:** seminar held as invited speaker at conference EACA 2022 (Encuentros de Álgebra Computacional y Aplicaciones).

**Apolarity and rank of powers of a non-degenerate quadratic form** Apr 2022

*Universidad Complutense de Madrid*

*Madrid, Spain*

- **Descrizione:** seminar organized by Red de Doctorandos en Matemáticas UCM.

**Decompositions of powers of a non-degenerate quadratic form** Mar 2022

*Universidad Complutense de Madrid*

*Madrid, Spain*

- **Descrizione:** seminar organized by Departamento de Álgebra, Geometría y Topología of Facultad de Ciencias Matemáticas.

**Tensor Ph.D. Seminar** Oct 2020 – Jul 2021

*Università degli Studi di Trento*

*Trento, Italy*

- **Descrizione:** cycle of seminars based on topics of algebraic geometry, in particular on the theory of tensors, held by doctoral students of Alma Mater Studiorum– Università di Bologna, Università degli Studi di Ferrara, Università degli Studi di Firenze, Università degli Studi di Siena and Università degli Studi di Trento (entirely held in online mode, due to the COVID-19 pandemic).

**Struttura algebrica di complessi di forme differenziali su varietà olomorfe** Jul 2019

*Università degli Studi di Firenze*

*Florence, Italy*

- **Descrizione:** seminar preparatory to the master's degree programme in Mathematics.

## ADDITIONAL TRAINING ACTIVITIES

**Lingua inglese: livello B2** Oct 2021 – Jan 2022

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Description:** foreign language course at Centro Linguistico di Ateneo (CLA), with certificate of attendance and achievement.
- **Topics:** English language at QCER level B2.
- **Duration:** 50 hours.

**Modulo 2 – Formazione generale dei lavoratori alla salute e sicurezza** Nov 2021

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Description:** training course.
- **Topics:** identification of risk factors and their assessment; risk factors in the most common workplaces; fire risk and emergency management; safety signs; indirect risk factors.
- **Duration:** 4 hours.

### Modulo 1 – Formazione generale dei lavoratori alla salute e sicurezza

Oct 2021

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Description:** training course.
- **Topics:** general information on risks and correct behavior in the locations of University of Bologna; Consolidated Act and safety figures; concept of risk; supervisory, control and assistance bodies; safety management at the University of Bologna.
- **Duration:** 4 hours.

### Lingua inglese: livello B1++

Oct 2020 – Jan 2021

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Description:** foreign language course at Centro Linguistico di Ateneo (CLA), with certificate of attendance and achievement.
- **Topics:** English language at QCER level B1++.
- **Duration:** 50 hours.

### La protezione dei dati personali

Oct 2020

*Alma Mater Studiorum – Università di Bologna*

*Bologna, Italy*

- **Description:** training course.
- **Topics:** GDPR – General Data Protection Regulation; cybersecurity; personal data in historical, scientific and statistical research.
- **Duration:** 5 hours.

## KNOWLEDGE AND SKILLS

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### Language skills

- **Italian:** native-speaking.
- **English:** understanding – B2, speaking – B2, writing – B2.
- **Spanish:** understanding – A2, speaking – A2, writing – A2.

### Digital skills

- **Programming languages:** C (basic knowledge), Latex (intermediate knowledge).
- **Software:** Macaulay2 (intermediate knowledge), Matlab (basic knowledge), Microsoft Office (intermediate knowledge), TexMaker (intermediate knowledge).

## AWARDS

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### Premio di Laurea

2017

*Università degli Studi di Firenze*

*Florence, Italy*

- **Description:** competition announced by Dipartimento di Matematica e Informatica "Ulisse Dini" for the assignment of four awards for degree programmes in Mathematics and Computer Science to the best candidates who obtained a bachelor's degree in Mathematics or Computer Science.

### Diploma Premiato

2012

*Comune di Bagno a Ripoli*

*Bagno a Ripoli (Florence), Italy*

- **Description:** initiative organized by Comune di Bagno a Ripoli (Florence) to celebrate the students enrolled in high schools graduated with a final mark greater than 90/100.