

# Kostas Psaromiligkos

## Research Interests

Representation Theory, Algebraic Geometry.

## Professional Experience

2023-present **Postdoctoral Researcher**, *Université Clermont Auvergne*, Clermont-Ferrand, France.  
Funded under: EXCELLENT SCIENCE - European Research Council (ERC) - Modular representation theory of reductive algebraic groups and local Geometric Langlands duality

## Education

2018-2023 **Ph.D in Mathematics**, *University of Chicago*, Advisor: Ngô Bao Châu.  
Thesis: The Lafforgue variety and topics in Geometric Representation Theory  
2017-2018 **M.Sc in Mathematics**, *University of Chicago*.  
2014-2017 **B.Sc in Mathematics**, *National and Kapodistrian University of Athens*, GPA: 10.0/10.0.

## Publications and Preprints

**Lafforgue's variety and irreducibility of induced representations.**

arXiv:2211.11834 (2022) (23 pages)

**Character sheaves in characteristic  $p$  have nilpotent singular support.**

arXiv:2211.11126 (2022) (10 pages)

**Branchwidth is  $(1, g)$ -self-dual**, joint with G. Kontogeorgiou, A. Leivaditis, G. Stamoulis, D. Zoros.

Discrete Applied Mathematics 350, (2024) p. 1-9

**Directed Lovász Local Lemma and Shearer's Lemma**, joint with L. Kirousis, J. Livieratos.

Annals of Mathematics and Artificial Intelligence 81, (2020) p. 133-155

**Acyclic Edge Coloring through the Lovász Local Lemma**, joint with I. Giotis, L. Kirousis and D. M. Thilikos.

Theoretical Computer Science 665, (2017) p. 50-60

## Awards/Fellowships/Scholarships

2018 **Onassis fellowship for Doctoral studies**, \$20,800.  
2014-2017 **Award for excellence in Undergraduate Studies**, *National Science Foundation of Greece*.  
2014-2017 **International Mathematical Competition for University Students**, Medals: Gold, Silver, Silver.  
2014-2015 **Southern Eastern European Mathematical Olympiad for University Students**, Medals: Gold, Gold.

## Talks

Apr 2024 **Arithmetic seminar**, *Université de Lille*, France.  
Apr 2024 **Algebra seminar**, *Université de Lyon*, France.  
Mar 2024 **Representations of Reductive Groups**, *Institut de Mathématiques de Marseille*, France.  
Nov 2023 **Greek Algebra and Number Theory seminar**, online, Recording: Part 1, Part 2.  
Jan 2023 **Geometry Seminar**, *University of Florence*, Italy.  
Jan 2023 **Algebraic Geometry Seminar**, *University of Pisa*, Italy.

- Dec 2022 **Junior Number Theory Days**, *Johns Hopkins University, USA.*
- Nov 2022 **Student seminar on Character Sheaves**, *University of Chicago, USA.*
- Jul 2022 **2nd Congress of Greek Mathematicians**, *National Technical University of Athens, Greece.*
- Feb 2022 **Arizona Winter School: Automorphic forms beyond  $GL_2$** , *University of Arizona, USA.*
- Dec 2021 **Student seminar on Representation Theory**, *University of Chicago, USA.*
- Jul 2020 **Student seminar on Algebraic Geometry**, *Online.*
- Jun 2019 **1st Congress of Greek mathematicians**, *National Technical University of Athens, Greece.*
- Feb 2019 **Student seminar on Representation Theory**, *University of Chicago, USA.*

## Selected Workshops and Conferences

- Feb 2022 **Arizona Winter School: Automorphic forms beyond  $GL_2$** , *Tucson, USA.*
- Jul 2022 **Summer school on the Langlands program**, *Online participation, France.*
- Feb 2020 **Perverse Sheaves in Enumerative Geometry**, *Bonn, Germany.*
- Jul 2019 **L-Functions and Geometric Representation Theory**, *Nisyros, Greece.*

## Teaching Experience

- 2018-2022 **University of Chicago, Graduate Student Lecturer.**
- Autumn 2022: Calculus II (Math 152)
  - Winter 2022: Calculus III (Math 153)
  - Autumn 2021: Calculus III (Math 153)
  - Spring 2021: Mathematical Methods for Social Sciences (Math 195)
  - Autumn 2020: Linear Algebra (Math 196)
  - Winter 2020: Elementary Calculus II (Math 132)
  - Autumn 2019: Elementary Calculus I (Math 131)
- 2018-2022 **University of Chicago, Teaching assistant.**
- Autumn 2022: Graduate Algebra I (Math 351)
  - Winter 2022: Graduate Algebra II (Math 352)
  - Spring 2021: Honors Analysis in  $\mathbb{R}^n$  III (Math 209)
  - Spring 2020: Mathematical Methods for Physical Sciences I (Math 200)
  - Winter 2020: Graduate Algebra II (Math 352)
  - Autumn 2019: Graduate Algebra I (Math 351)
  - Spring 2019: Honors Calculus III (Math 163) (Inquired Based Learning style)
  - Winter 2018: Honors Calculus II (Math 162) (Inquired Based Learning style)
  - Autumn 2018: Honors Calculus I (Math 161) (Inquired Based Learning style)

## Service and Outreach

### Refereeing

I have served as a referee for Discrete Applied Mathematics.

### Other

- 2022 **Student seminar on Character Sheaves**, *University of Chicago, Organizer.*
- 2021-2022 **Directed Reading Program**, *University of Chicago, Co-organizer.*
- Managed a program pairing undergraduate and graduate students for quarter-long reading projects.
- 2018-2021 **Directed Reading Program**, *University of Chicago, Mentor.*
- Projects: Basics of Algebraic Number Theory, Arithmetic of Elliptic Curves, Spectral Graph Theory.
- 2020 **Student seminar on Algebraic Geometry**, *Online, Co-organizer.*
- 2017 **Southern Eastern European Mathematical Olympiad for University Students**, *Romania, Team Leader.*