

# Kübra Benli

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## ACADEMIC POSITIONS

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PIMS Postdoctoral Fellow, University of Lethbridge	Oct. 2022-present
Postdoctoral Fellow, Institut Élie Cartan de Lorraine, Nancy	May 2021-Sept. 2022
Graduate Teaching Assistant, University of Georgia, Athens	2015- 2020
Graduate Teaching Assistant, Boğaziçi University, İstanbul	2012- 2015

## EDUCATION

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2015 - 2020	Ph.D. in Mathematics, University of Georgia, Athens Dissertation Title: Three Topics in Analytic Number Theory Advisor: Paul Pollack
2012 - 2015	M.S. in Mathematics, Boğaziçi University, İstanbul M.S. Thesis Title: The mean values of the functional equation factor $\chi_\psi$ at the zeros of $\zeta^{(k)}(s)$ and $L^{(k)}(s, \psi_2)$ Advisor: Cem Yalçın Yıldırım
2007 - 2012	B.S. in Mathematics, Boğaziçi University, İstanbul

## HONORS, SCHOLARSHIPS, AWARDS

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PIMS funding for the Alberta Number Theory Days XIV, at the Banff International Research Station (BIRS) \$5,000CAD	Spring 2023
PIMS (Pacific Institute for the Mathematical Sciences) Postdoctoral Fellowship,	2021
William Armor Wills Memorial Scholarship Award, Dept. of Mathematics, University of Georgia (awarded to one or two of the graduate students each year at the department of Mathematics at the University of Georgia)	2020
Gülnihal Yücel Outstanding Teaching Assistant Award, Department of Mathematics, Boğaziçi University (awarded annually to one of the TAs at the Department of Mathematics at Boğaziçi University)	2014
TÜBİTAK (The Scientific and Technological Research Council of Türkiye) Scholarship for Graduate Students (awarded to those who continue graduate studies in Türkiye)	2012-2014
TÜBİTAK Scholarship for Undergraduate Students (awarded to the top 0.1% in the university placement examination (OSS) in Türkiye who pursue degrees in Science)	2007-2012
Honors Student - Boğaziçi University	2012
Boğaziçi University Certificate in French	2012
Silver Medal in Mathematical Olympiad for High School Students (ILMO) at Koç University	2007

## RESEARCH: PUBLICATIONS AND PREPRINTS

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*Research Interests:* Analytic and Elementary Number Theory

Small prime  $k$ th power residues, *Proc. Amer. Math. Soc.* **148** (2020), no. 9, pp. 3801-3809.

On the number of prime factors of the composite numbers resulting after a change of digits of primes, *J. Théor. des Nombres Bordeaux* **31** (2019), no. 3, pp. 689-696.

Small prime  $k$ th power residues for  $k = 2, 3, 4$ : a quadratic reciprocity approach (with P. Pollack), *Proc. Amer. Math. Soc.* **147** (2019), pp. 987-994.

On the number of pure fields of prime degree, *Colloquium Mathematicum* **153(1)**, (2018), pp. 39-50.

Mean values of the functional equation factors at the zeros of derivatives of the Riemann Zeta-Function and Dirichlet  $L$ -functions (with E. Elma and C. Y. Yildirim), *Analytic Number Theory, Modular Forms and  $q$ -Hypergeometric Series*, Springer Proc. Math. Stat. **221**, Springer, Cham, 2017, pp. 59-67.

An annotated bibliography for comparative prime number theory, with G. Martin, P. J. S. Yang, A. Bahrini, P. Bajpai, J. Downey, Y. Y. Li, X. Liang, A. Parvardi, R. Simpson, E. White, and C. H. Yip., *preprint*, pp. 98, available at <https://arxiv.org/abs/2309.08729>.

Sums of proper divisors with missing digits (with G. Cesana, C. Dartyge, C. Dombrowsky, and L. Thompson), to appear in the *Proceedings of WINE4*, *preprint available at* <https://arxiv.org/abs/2307.12859>.

A discrete mean value of the Riemann zeta function (with E. Elma and N. Ng), *submitted*, pp. 42, *preprint available at* <https://arxiv.org/abs/2309.08729>.

Explicit zero repulsion of Dirichlet  $L$ -functions (with S. Goel, H. Twiss and A. Zaman), *preprint, in preparation*, pp. 12.

Explicit zero free regions for Dirichlet  $L$ -functions (with E. Elma, H. Kadiri), *preprint, in preparation*, pp. 20.

On the discrete fourth moment of the derivative of the Riemann zeta function (with F. Çiçek, E. Elma, A. Hamieh and N. Ng), *preprint, in preparation*.

On the large values of short character sums, *preprint, in preparation*. pp. 10.

Subword complexity of the Fibonacci-Thue-Morse sequence along polynomials (with T. Stoll), *preprint, in preparation*, pp. 15.

## ORGANIZATIONAL ACTIVITIES, REVIEWS, MENTORING

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Co-organizer of Alberta Number Theory Days XIV, Banff, Alberta March 31, 2023-April 2, 2023

Co-leader to the project “Explicit Zero Repulsion of Dirichlet  $L$ -functions” in the Inclusive Paths in Explicit Number Theory, Summer School, BIRS at UBC–Okanagan, Kelowna, BC July 2022

Co-organizer of CRG  $L$ -functions in Analytic Number Theory Weekly (Online) Seminars, Fall 2022-present (31 talks scheduled, <https://sites.google.com/view/crgl-functions/crg-weekly-seminar>)

Co-mentor with Cécile Dartyge to M1 project titled “Systèmes de congruences couvrant et applications” (Covering congruence systems and applications) by Ayoub Benterkia Spring 2022

Reviewer for ZBMath	June 2021-present
Reviewer for AMS Reviews	September 2020-present
Refereeing for Acta Arithmetica, Advances in Mathematics, American Math Monthly	
MATH CAMP at the University of Georgia for middle and high school students,	Summer 2018
Mentor in the Directed Reading Program at the University of Georgia,	Fall 2017, Fall 2018
Mentees: Yidi Chen, Miranda Hermes.	
Co-organizer of the Student Seminars in the Department of Mathematics at Boğaziçi University.	2014

## TEACHING

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PIMS Postdoctoral Fellow, University of Lethbridge	2022 - present
Math 1410, Elementary Linear Algebra,	
Math 3400, Group and Ring Theory,	
Math 1560, Calculus I (x2).	
Graduate Teaching Assistant, Department of Mathematics, University of Georgia	2015 - August 2020
Math 2250E, Online Calculus I (Instructor of Record),	
Math 2250, Calculus I (x3) (Instructor of Record),	
Math 1113, Precalculus (x3) (Instructor of Record),	
Math 2200, Analytic Geometry and Calculus (Recitation Instructor),	
Math 3200, Introduction to Higher Mathematics (WIP- Writing Intensive Program TA),	
Math 5200/7200, Foundations of Geometry I (Grader),	
Math 3100E, Sequences and Series (Honors) (Grader),	
Math 4670, Combinatorics (Grader),	
Math 4400, Number Theory (Grader).	
Teaching Assistant, Department of Mathematics, Boğaziçi University, İstanbul	2012 - 2015
Math 431, Complex Analysis (x3),	
Math 327, Number Theory (x2),	
Math 321, Algebra I,	
Math 322, Algebra II,	
Math 202, Differential Equations (x2),	
Math 101, Calculus I.	

# TALKS

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## *Upcoming Talks:*

The Quebec-Vermont Number Theory Seminar, Montréal (*invited*) March 28, 2024

CIRM-“Prime numbers and arithmetic randomness” Conference (*invited*) June 23-27, 2025

## *Previous Talks:*

Sums of proper divisors with missing digits January, 2024

University of British Columbia Number Theory Seminar (online, *invited*)

Discrete moments of the derivatives of the Riemann zeta function (*invited*) December 2, 2023

CMS Winter Meeting, Montréal

Sums of proper divisors with missing digits October 2023

PIMS-Lethbridge Number Theory and Combinatorics seminar

Character Sums and Primes July 2022

IECL Réunion, IECL, Metz

Factor complexity along polynomial subsequences of the Fibonacci-Thue-Morse sequence July 2022

ArithRand 2022, TU Graz

Changes in digits of primes (*invited*) April 2022

Zahlentheoretisches Kolloquium, TU Graz

Small prime  $k$ th power residues modulo  $p$  February 2022

Emergent Research: The PIMS Postdoctoral Fellow Seminar (online)

Small prime  $k$ th power residues modulo  $p$  (*invited*) January 2022

Séminaire Ernest, Institut de Mathématiques de Marseille

Changes in digits of primes December 2021

Metz-Nancy Number Theory Seminar, IECL, Nancy

Changes in digits of primes (*invited*) November 2021

Rencontres de théorie analytique et élémentaire des nombres, Paris

Small prime power residues modulo  $p$  May 2021

Metz-Nancy Number Theory Seminar, IECL, Nancy (online)

Prime power residues modulo  $p$  (*invited*) September 2020

PIMS-Lethbridge Number Theory and Combinatorics seminar (online)

Short sums of Dirichlet characters July 2020

Mock AMS Graduate Student Conference, University of Georgia (online)	
On the number of prime power residues ( <i>invited</i> )	November 2019
Number Theory Seminar, University of Waterloo, Ontario	
On the number of prime power residues ( <i>invited</i> )	October 2019
Emory Algebra and Number Theory Seminars, Emory University, Atlanta	
Changes of Digits of Primes	September 2019
PANTS XXXII, University of North Carolina at Charlotte	
Squares modulo $p$	July 2019
Mock AMS Graduate Student Conference, University of Georgia	
Small prime power residues	July 2019
Journées Arithmétiques XXXI, İstanbul University, İstanbul	
Small prime power residues modulo $p$	December 2018
PANTS XXXI, Palmetto Number Theory Series, University of South Carolina	
Small prime power residues	October 2018
UGA Number Theory Seminar, University of Georgia	
Small prime power residues	July 2018
Mock AMS Graduate Student Conference, University of Georgia	
Sieve methods and an application to prime power residues	March 2018
Graduate Students Seminars, University of Georgia	
Counting Pure Fields	July 2017
Graduate Student Summer Conference, University of Georgia	
Switching Digits of Primes	July 2016
Mock AMS Conference, University of Georgia	
Mean value theorems for the derivatives of Riemann Zeta-Function and Dirichlet $L$ -functions	2016
Graduate Student Seminars, University of Georgia	
On the Gaps Between Primes	2014
Graduate Student Seminars, Boğaziçi University	
Order of an Entire Function	2013
Student Seminars, Boğaziçi University	

## WORKSHOPS AND CONFERENCES ATTENDED

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Inclusive Paths in Explicit Number Theory, Summer School, BIRS at UBC–Okanagan, Kelowna, BC	July 2-15, 2023
Alberta Number Theory Days XIV (co-organizer), Banff, AB	March 31, 2023-April 2, 2023
CRG Launch Event, BIRS in Banff, AB	November 18-20, 2022
Women in Numbers Europe 4, Utrecht	August 29-September 2, 2022
“Pre-images of the sum of proper divisors function” led by Lola Thompson and Cécile Dartyge	
Journée Scientifique “Pseudorandomness, cryptography and number theory”, Nancy	December 2021
BIRS Alberta Number Theory Days XIII (hybrid, attended online)	November 2021
2020 Virtual CMS Winter Meeting	December 2020
AMS Fall Eastern Sectional Meetings (held online)	October 2020
PANTS XXXII, University of North Carolina at Charlotte, NC	September 2019
Journées Arithmétiques XXXI, İstanbul	July 2019
NSF-CBMS Conference: $L$ -functions and Multiplicative Number Theory, University of Mississippi	May 2019
Joint Mathematics Meetings, Baltimore, MD	January 2019
PANTS XXXI, Palmetto Number Theory Series, University of South Carolina	December 2018
MRC Workshop on Number Theoretic Methods in Hyperbolic Geometry, Whispering Pines, RI.	June 2018
NSF-CBMS Conference on Additive Combinatorics from a Geometric Viewpoint, USC	May 2018
CRM Workshop on Probability in Number Theory, University of Montréal	May 2018
Gainesville International Number Theory Conference, University of Florida	March 2016
AMS Spring Southeastern Sectional Meeting, University of Georgia	March 2016
Palmetto Number Theory Series XXV, Clemson University	December 2015
International Conference on Algebra and Number Theory, Samsun, Turkey	August 2014
Turkish Mathematical Society (TMD) 27 <sup>th</sup> National Mathematics Symposium, İstanbul	August 2014

## LANGUAGES

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Turkish (native), English (fluent), French (advanced), Spanish (beginner), Latin (beginner).