Curriculum Vitae

Matija Kazalicki

Personal Information:

Birthdate: 31.1.1981

Birthplace: Zagreb, Croatia

Office Address: University of Zagreb
Faculty of Science
Department of Mathematics
Bijenicka cesta 30
10000 Zagreb, Croatia

E-mail: matija.kazalicki@math.hr

Phone: +385 1 460 5888

Academic Degrees

Ph.D. 2010	University of Wisconsin, Madison
	Advisor: Ken Ono
B.Sc. 2003	University of Zagreb, Croatia

Professional Experience

2023 -   Professor, Department of Mathematics,
University of Zagreb

2018 - 2023   Associate Professor, Department of Mathematics,
University of Zagreb

2013 - 2018   Assistant Professor (docent), Department of Mathematics,
University of Zagreb

2010 - 2013   Senior Assistant (Postdoc), Department of Mathematics,
University of Zagreb

2006 - 2010   Teaching Assistant, Department of Mathematics,
University of Wisconsin-Madison

2004 - 2006   Teaching Assistant, Department of Mathematics
University of Zagreb

Professional Duties

2023   Conference director
Representation Theory XVIII, Dubrovnik

2019 - 2021   Head of the Division for Algebra and Foundations of Mathematics
Faculty of Science, University of Zagreb

2013 - 2019   Chairman of Scientific colloquium of Croatian Mathematical Society

2022   Conference director
Representation Theory XVII, Dubrovnik

2020   Member of the Program Committee of 20th Central European
Conference on Cryptology, Zagreb

2018   Member of the Organizing Committee of Torsion groups and
Galois representations of elliptic curves, Zagreb

2018   Chairman of the Organizing Committee of Lectures on computational
aspects of algebraic geometry, Zagreb

2014   Member of the Organizing Committee of Workshop on Number Theory
and Algebra (on the occasion of the 60th birthday of Ivica Gusić), Zagreb

Grants

2018 - 2022   Principal investigator on the scientific project Diophantine geometry
and applications (supported by the Croatian Foundation for Science)

2017 -   Member of Center of Excellence QuantiXLie (Unit for Representation
Theory of Lie Algebras, Number Theory, and Related Structures)

Visiting Research Positions

2012 March   MPIM, Bonn

Publications

1. **Quadratic twists of genus one curves and Diophantine quintuples**, preprint

2. **Ranks of elliptic curves and deep neural networks** (joint with D. Vlah), *Research in Number Theory*, 9, 53 (2023)

3. **Second moments and the bias conjecture for the family of cubic pencils** (joint with B. Naskrecki), preprint

4. **Elliptic curves with torsion groups Z/8Z and Z/2Z * Z/6Z** (joint with A. Dujella and J. C. Peral), Rev. R. Acad. Cienc. Exactas Fis. Nat. Ser. A Math. RACSAM 115 (2021), Article 169

5. **Diophantine triples and K3 surfaces** (joint with B. Naskrecki), J. Number Theory, 236 (2021), 41-70, https://doi.org/10.1016/j.jnt.2021.07.009

6. **D(n)-quintuples with square elements** (joint with A. Dujella and V. Petričević), Rev. R. Acad. Cienc. Exactas Fis. Nat. Ser. A Math. RACSAM 115 (2021), Article 172

7. **Rational D(q)-quadruples** (joint with G. Dražić), Indag. Math. (N.S.), Volume 33, Issue 2, March 2022, Pages 440-449

8. **Rational Diophantine sextuples containing two regular quadruples and one regular quintuple** (joint with A. Dujella and V. Petričević), *Acta Mathematica Spalatensia*, 1 (2021), 19-27

9. **There are infinitely many rational Diophantine sextuples with square denominators** (joint with A. Dujella and V. Petričević), *Journal of Number Theory*, 205 (2019), 340-346.

10. **Congruences for sporadic sequences and modular forms for non-congruence subgroups**, *Research in the Mathematical Sciences*, Res Math Sci (2019) 6: 28. https://doi.org/10.1007/s40687-019-0191-3.

11. **Diophantine m-tuples in finite fields and modular forms** (joint with A. Dujella), *Research in Number Theory* 7, 3 (2021)

12. **On a special case of Watkins' conjecture** (joint with D. Kohen), *Proceedings of AMS*, 146 (2018), pp. 541-545.

13. **Supersingular zeros of divisor polynomials of elliptic curves of prime conductor** (joint with D. Kohen) *Research in the Mathematical Sciences*, Res Math Sci (2017) 4: 10. https://doi.org/10.1186/s40687-017-0099-8

14. **More on Diophantine sextuples** (joint with A. Dujella), *in Number Theory - Diophantine problems, uniform distribution and applications, Festschrift in honour of Robert F. Tichy's 60th birthday (C. Elsholtz, P. Grabner, Eds.)*, Springer-Verlag, Berlin, 2017, pp. 227-235.

15. **There are infinitely many rational Diophantine sextuples** (joint with A. Dujella, M. Mikić and M. Szikszai), *Int. Math. Res. Not. IMRN 2017* (2) (2017), 490-508.

16. **Modular parametrizations of certain elliptic curves** (joint with Y. Sakai and K. Tasaka), *Acta Arithmetica, 163 (2014), pp. 33-43.*

17. **Modular forms, hypergeometric functions and congruences**, *The Ramanujan Journal, 34 (2014), pp. 1-9.*

18. **Modular forms, de Rham cohomology and congruences** *(joint with A.J. Scholl)*, *Trans. Amer. Math. Soc. 368 (2016), pp. 7097-7117.*

19. **Congruent numbers and congruences between half-integral weight modular forms**, *Journal of Number Theory, 133 (2013), 4, pp. 1079-1085.*

20. **2-adic properties of modular functions associated to Fermat curves**, *Proceedings of AMS, 139 (2011), 12; pp. 4265-4271.*

21. **2-adic and 3-adic part of class numbers and properties of central values of L-functions**, *Acta Arithmetica, 147 (2011), pp. 51-72.*

22. **Zeros of certain Drinfeld modular functions**, *Journal of Number Theory, 128 (2008), pp. 1662-1669.*

23. **Linear relations for coefficients of Drinfeld modular forms**, *International Journal of Number Theory, 4 (2008), pp. 171-176.*

Awards

2011 Best young scientist award
Faculty of Science, University of Zagreb

2006/2007, 2007/2008 Croatian Government Fellowship (5000 Euro)

2003 "Top Student" Scholarship

2003 Third Place at Vojtech Jarnik International Mathematical Competition (Ostrava)

2002 First Prize at International Mathematical Competition for University Students(Warsaw)

2001 10th place at ACM programming competition (Warsaw)

1999 International Olympiad in Informatics, Bronze medal

1997,1998,1999 International Mathematical Olympiad, Bronze medal

1997-1998, 2001-2002 The City of Zagreb Merit Scholarship

Conference and seminar talks

July 2023 Representation theory XVIII, Dubrovnik
Quadratic twists of genus one curves and Diophantine quintuples
May 2023 35th Automorphic Forms Workshop, Baton Rouge, Louisiana
Second moments and the bias conjecture for the family of cubic pencils
April 2023 Seminar talk
UCD School of Mathematics and Statistics, Dublin
Congruence for sporadic sequences and modular forms
June 2022 SAGA seminar, Adam Mickiewicz University, Poznan
Quadratic twists of genus one curves and Diophantine quintuples
March 2021 Research seminar "Diophantine number theory"
joint project of the FWF and the NKFIH (online)
Recent development in the theory of rational
Diophantine m-tuples
November 2020 Warsaw Number Theory Seminar (online)
Congruences for sporadic sequences, three fold
covers of the elliptic modular surface and
modular forms for non-congruece subgroups
December 2019 Barcelona Fall Workshop on Number Theory II
University of Barcelona
Congruences for sporadic sequences and modular forms
for non-congruence subgroups
June 2019 Representation theory XVI
Dubrovnik
Congruences for sporadic sequences and modular forms
for non-congruence subgroups
April 2019 The fifth mini symposium of the Roman Number Theory Association
Universita Roma Tre
Congruences for sporadic sequences and modular forms
for non-congruence subgroups
January 2019 Seminar talk
Adam Mickiewicz University, Poznan
Congruences for sporadic sequences and modular forms
for non-congruence subgroups
November 2018 Seminar talk
Istanbul Center for Mathematical Sciences, Istanbul
Congruences for sporadic sequences and modular forms
for non-congruence subgroups
October 2018 Conference on Diophantine m-tuples and Related Problems II
Purdue University Northwest, Westville/Hammond Indiana
Rational Diophantine m-tuples

October 2018   Seminar talk
University of Toronto, Toronto
Congruences for sporadic sequences and modular forms
for non-congruence subgroups

September 2018   Joint meeting UMI-SIMAI-PTM
Wrocław
"Zagier's sporadic sequences and Atkin and Swinnerton-Dyer
congruences"

May 2018   Antalya Algebra Days XX
Şirnice, Turkey
"Diophantine m-tuples"

April 2018   AIMS course (with Dino Festi)
Senegal
"Elliptic curves in cryptography"

December 2017   Seminar talk
University of Cologne
"Supersingular zeros of divisor polynomials of elliptic curves
of prime conductor and Watkins' conjecture"

October 2017   Seminar talk
University of Wisconsin, Madison
"Supersingular zeros of divisor polynomials of elliptic curves
of prime conductor and Watkins' conjecture"

October 2017   Seminar talk
Penn State University
"Diophantine m-tuples"

June 2017   Journales Algophantiennes Bordelaises 2017
Bordeaux
"Supersingular zeros of divisor polynomials of elliptic curves of prime conductor"

September 2016   ELAZ 2016
Strobl am Wolfgangsee
"Rational Diophantine sextuples"

July 2016   Building Bridges: Workshop on Automorphic Forms and Related Topics
University of Sarajevo
"Diophantine quadruples over finite fields"

June 2016   6th Croatian Mathematical Congress,
Department of Mathematics, University of Zagreb
"Diophantine quadruples in finite fields and modular forms"

December 2014   Mathematical colloquium
Department of Mathematics, University of Osijek
"Modular forms in number theory "

November 2014   Seminar talk,
UCD, Dublin
"Modular forms, de Rham cohomology and congruences"

May 2014   28th Automorphic Forms Workshop,
Moab Arts and Recreation Center, Moab, Utah
"Divisor polynomials of Hecke eigenforms"

March 2013   27th Automorphic Forms Workshop,
University College Dublin, Dublin
"Modular parametrizations of certain elliptic curves"

June 2012   5th Croatian Mathematical Congress,
Department of Mathematics, University of Rijeka, Rijeka,
"Modular forms, de Rham cohomology and congruences"

February 2012   A Workshop on Modular Forms and Related Topics,
AUB, Beirut
"Weakly Modular Forms, de Rham Cohomology and Congruences"

October 2011   Student Conference on Automorphic Forms,
Technische Universitat, Darmstadt
"The arithmetic of modular forms for noncongruence subgroups"

July 2011   Seminar talk,
Morningside Center of Mathematics, Chinese Academy of Sciences, Beijing
"The arithmetic of modular forms associated to Fermat curves"

July 2011   NCTS Special Day on Noncongruence Modular Forms ,
NCTS, Hsin-Chu, Taiwan
"The arithmetic of modular forms associated to Fermat curves"

March 2011   Scientific colloquium of Croatian Mathematical Society,
University of Zagreb, Zagreb
"The arithmetic of modular forms on Fermat curves"

February 2011   Number theory and algebra seminar,
University of Zagreb, Zagreb
"Jacobi sums, Grossencharacters and modular forms"

January 2011   Colloquium of Mathematical and Physical Society of Rijeka,
Rijeka
"The ubiquity of modular forms in mathematics (and physics) "

January 2011   Arithmetic of Modular forms and Elliptic curves,
IMPA, Rio de Janeiro
"The arithmetic of modular forms associated to Fermat curves"

October 2010   Seminar talk,
Max Planck Institute, Bonn
"The arithmetic of modular forms associated to Fermat curves"

October 2010   Seminar talk,
University of Cologne, Cologne
"The arithmetic of modular forms associated to Fermat curves"

October 2010   Number theory and its applications,
University of Debrecen, Debrecen
"2-adic properties of modular functions associated to the Fermat curves"

May 2010 Illinois Number Theory Conference,
University of Urbana-Champaign, Urbana-Champaign
"2-adic properties of modular functions associated to the Fermat curves"

March 2010 24th Automorphic Forms Workshop,
University of Hawai'i at Manoa, Honolulu
"2-adic properties of modular functions associated to the Fermat curves"

June 2009 Conference in number theory,
Carleton University, Ottawa
"2-adic and 3-adic part of class numbers and properties"

March 2008 22nd Annual Workshop on Automorphic Forms and Related Topics,
Texas AM University
"Zeros on certain Drinfeld modular functions"