Mohamed Taoufiq Damir

Personal information

Name: Mohamed Taoufiq.
Surname: Damir.
Citizenship : Moroccan.
Mailing Address: Aalto University
Department of Mathematics and Systems Analysis
P.O. Box 11100, FI-00076 Aalto, Finland.
Homepage : www.taoufiq.info

Education

2017-2020	**PhD Candidate**, *Aalto University*, Helsinki, Finland, (Expected graduation date: October 2020).
2015	**Master II**, *Padova University*, Padova, Italy. ALGANT (Algebra Geometry and Number Theory)
2013	**Master I** , *Bordeaux University*, Bordeaux, France. ALGANT (Algebra Geometry and Number Theory)
2012	**Masters of Mathematical Sciences (Distinction)**, *African Institute for Mathematical Siencies,AIMS*, Senegal.
2010	**Bachelor of Mathematical Sciences and applications**, *Cadi Ayad University, Faculte des Sciences Semlalia* , Marrakech, Morocco.

Awards and scholarships

Title	*The African Institute for Mathematical Sciences, Full scholarship.*
Country	Senegal
Description	One of 32 students including 13 African nationalities, where I am the only Moroccan student selected.
Title	*Erasmus Mundus, Category A scholarship.*
Country	France/Italy.
Description	Ranked the 1st in the ENPI south region.
Title	*Teaching award.*
Country	Finland.
Description	Teacher of the year award 2019 (teaching assistant category), Department of mathematics and systems analysis, Aalto university.

PhD dissertation

Title	*Well-Rounded Lattices and Applications to Physical Layer Security.*
Supervisors	Camilla Hollanti-Aalto university.
Description	We study lattice codes for wiretap channels in the context of physical layer security .

Master thesis II (ALGANT)

Title	*Bounded Gaps between primes*
Supervisors	A .Languasco- Padova-Italy
Key words :	Sieve methods, GPY, J.Maynard and T.Tao, Y.Zhang.

Master Thesis I

Title	*Fibonacci numbers with prime sums of complimentary divisors*
Supervisors	Florian Luca- UNAM Mexico
Description	Estimating an asymptotic density using analytic and algebraic number theory techniques.

Bachelor Thesis

Title	*Utility Function*
Supervisors	Hammadi Bouslous- FSSM Morocco
Description	description of mathematical utility and it proprieties.

Seminars and conferences.

Upcoming activities

September 19-20, 2020	**(Invited lecture) The Palmetto Number Theory Series (PANTS)**, *University of South Carolina*, USA. (Online)
September 21-25, 2020	**(selected young researcher) The virtual Heidelberg Laureate Forum (HLF)**, *Heidelberg*, Germany. (Online)
September 19-24, 2021	**(selected young researcher) The 8th Heidelberg Laureate Forum (HLF)**, *Heidelberg*, Germany.

Past activities

2020	**(Workshop) Lattices: Geometry, Algorithms and Hardness**, *Simons Institute-UCB*, Berkeley, USA.
2020	**(Talk) A Brief Introduction to the Theory of Lattices**, *Algebra and discrete mathematics seminar*, Aalto, Finland.
2019	**(Talk) Lattices in Cryptography**, *ANTA talks*, Aalto, Finland.
2018	**(Talk) Well rounded lattices in wireless communication**, *Claremont Colleges Algebra / Number Theory / Combinatorics Seminar*, Claremont, California, USA.
2018	**(Talk) Explicit well rounded twists of planar ideal lattices**, *Number theory and coding theory: Contemporary applications in security* , Turku, Finland.
2017	**Finnish Number Theory days** , *Tampere*, Finland.
2017	**CIMPA school, Algebraic methods in Coding Theory** , *Ubatuba*, Brazil, .

2016 **CIMPA school, Number Theory and Applications** , *Tipaza*, Algeria, .

2016 **(Talk) the AIMS Journal Public Talks : Analytic Number Theory, a bridge between discrete and Continuous.**, *AIMS Senegal*, .

2014 **(Talk) the Number theory student talks : On arithmetic progressions** , *the University of Padova*.

2014 **Number theory seminar** , *the Mathematical Institute of Bordeaux*, .

2013 **Conference : Thue 150 conference** , *the Mathematical Institute of Bordeaux*, .

2013 **Workshop : Geometry and PDE,**, *AIMS-senegal*, .

2012 **Finite fields and Coding Theory**, *Pr.Mamadou Sanghare(UCAD-Senegal)*, AIMS-Mbour Senegal.

2012 **Fishing and Mathematics, Pr.Francis Laloe**, AIMS-Senegal, .

2012 **PDE and Fluids, Cedric Villani**, AIMS-Senegal.

Publications

My Erdös number is 2.

Submitted **Bases of minimal vectors in Lagrangian lattices** , *M. T. Damir, G. Mantilla-Soler*,, submitted June 2020 to Advances in Mathematics.

Submitted **An Approximation of Theta Functions with Applications to Communications** , *M. T. Damir, A. Barreal, C. Hollanti, R. Freij-Hollanti*,, submitted May 2020 to SIAM Journal on Applied Algebra and Geometry.

Submitted **Well-Rounded Lattices: Towards Optimal Coset Codes for Gaussian and Fading Wiretap Channels**, *M. T. Damir, A. Karrila, L. Amoros, O. Gnilke, D. Karpuk, C. Hollanti*,, submitted Dec 2019 to The IEEE Transactions on Information Theory.

August 2019 **Canonical basis Twists of Ideal Lattices from Real Quadratic Fields**, *M.T Damir, Lenny Fukshansky*, Houston Journal of Mathematics.

September 2018 **Well-Rounded Twists of Ideal Lattices from Real Quadratic Fields**, *M.T Damir, D. Karpuk*, Journal of Number Theory, 196 (March 2019), 168–196 .

June 2018 **Analysis of Some Well-Rounded Lattices in Wiretap Channels**, *M. T. Damir, O. Gnilke, L. Amoros, and C. Hollanti*, IEEE SPAWC conference 2018.

February 2014 **Members of Lucas sequences whose Euler function is a power of 2**, *M.T.Damir, F.Luca, A.Tall and B.Faye*, Fibonacci Quarterly, Vol 52, A3.

January 2014 **Fibonacci numbers with prime sums of complimentary divisors**, *M.T.Damir, F.Luca, A.Tall and B.Faye*, Integers electronic journal of combinatorial number theory, Vol 14, A5.

Experience

Feb-1st May 2018 **Research visit, Prof. Lenny Fukshansky**, *Claremont McKenna College*, USA.

September 2015- October 2016 **Tutoring scholarship (Full-time teaching assistant)** , *The African Institute for Mathematical Sciences*, Senegal.
Assisting Professors , giving mini courses, exercises sessions (Algebra, Primality testing and Number Theory), and orgnising the AIMS seminar

2014	**Mathematics Tutor**, *University of Bordeaux*, France.
	special courses for 1st, 2nd and 3rd Year students
2011	**Teaching Mathematics**, *Digital Knowlege*, Marrakech.
	Working with high school students
2011	**Working at a computer science center** , *Digital Knowlege Centre*, Marrakech.
2007	**Teaching Mathematics**, *Nawabigh School*, Marrakech.
	Working with high school students
2007	**Psychology and Pedagogy training**, *Nawabigh School*, Marrakech.
	Pedagogy and Psychology

Referees

Prof. Camilla Hollanti : camilla.hollanti@aalto.fi (PhD supervisor, Aalto University.)
Prof. Marcus Greferath : Marcus.Greferath@ucd.ie, University College Dublin, (My professor for a finite geometry course, I also served as his teaching assistant for Algebra I and II courses.)

Prof. Lenny Fukshansky : lenny@cmc.edu, Claremont McKenna College, co-author and my host for a 3 months research visit at Claremont McKenna College California, USA.

Dr. Amadou Tall : amadou.tall@aims-senegal.org (my co author and co-supervisor from AIMS and was my director at AIMS from my one year teaching assistant position at AIMS).

Languages

Arabic	Native
French	2nd Language
English	Advanced
Italian	A2
Finnish	A2

Computer skills

C,C++, Scilab, Python

Windows, Office, Linux, LaTeX, Matlab, Sage, Magma

Activities

Mathematics education	Various math talks for highschool students (MathAcademy Finland, AIMS Senegal)
Organization	- Organizing the AIMS journal public talks 2015-2016
	- Organizing the "What is ?" seminar 2019-2020, Aalto university-Finland
Volunteer activities	Earth without boundaries organization : working towards promoting cultural relations between Morocco and UK