

PERSONAL INFORMATION

Mohammad Adm

 Wadi Alharia, 198 Hebron (Autonomous Palestinian Territories)

 mjamathe@yahoo.com

Sex Male | Date of birth 24 Aug 1986 | Nationality Palestinian (Autonomous Palestinian Territories)

WORK EXPERIENCE

1 Sep 2016–Present

**Assistant professor**

Palestine Polytechnic University, Hebron (Autonomous Palestinian Territories)

1 May 2016–31 Jan 2017

**Associated fellow**

University of Konstanz, Konstanz (Germany)

Sep 2011–Apr 2012

**Teacher**

Palestine Polytechnic University, Hebron (Autonomous Palestinian Territories)

Sep 2008–Sep 2009

**Research and teaching assistant**

Palestine Polytechnic University, Hebron (Autonomous Palestinian Territories)

EDUCATION AND TRAINING

Oct 2012–Jan 2016

**Dr. rer. nat. in Mathematics**

University of Konstanz, Konstanz  
(Summa cum laude), GPA: 0,16

Sep 2009–Aug 2011

**MSc. in Mathematics**

The University of Jordan, Amman (Jordan)  
(Excellent), GPA: 4.00/4.00 (first rank among all the students of the university)

Jan 2005–Jun 2008

**BSc. in Mathematics**

Hebron University, Hebron (Autonomous Palestinian Territories)  
(Excellent Honors), GPA: 95.51% (first rank among all the students of the university)

Sep 2002–Jun 2004

**Secondary School (Tawjihi)**

Beit – Ula Secondary School, Hebron (Autonomous Palestinian Territories)  
Scientific branch, GPA: 95.7%

PERSONAL SKILLS

Mother tongue(s)

Arabic

Other language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	

English	C1	C1	C1	C1	C1
German	B1	B1	A2	B1	B1

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user  
Common European Framework of Reference for Languages

Job-related skills Microsoft Office, LaTeX.

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Independent user	Independent user	Independent user	Independent user	Independent user

Digital competences - Self-assessment grid

ADDITIONAL INFORMATION

Research interest Matrix theory, linear and multilinear algebra, real and complex analysis, graph theory, and combinatorics.

Theses Ph.D.: Perturbation and intervals of totally nonnegative matrices and related properties of sign regular matrices. University of Konstanz, submitted.  
 Supervisor: Prof. Dr. Jürgen Garloff.  
 M.Sc.: Geometrical relations between the zeros and critical points of polynomials, The University of Jordan, 2011.  
 Supervisor: Prof. Dr. Fuad Kittaneh.

Honours and awards

1. Bridge fellowship awarded by the Zukunftskolleg at the University of Konstanz, May 2016 - Jan. 2017.
2. Scholarship awarded by the German Academic Exchange Service (DAAD) to attain the Doctoral degree in mathematics at the University of Konstanz, Konstanz, Germany, April 2012 - March 2016.
3. Scholarship awarded by the German Academic Exchange Service (DAAD) to attain the M.Sc. degree in mathematics at The University of Jordan, Amman, Jordan, Sep. 2009 – Aug. 2011.
4. Scholarship awarded by Hebron University for excellence students in the university, full funding of the B. Sc. studies, Jan. 2005 – June 2008.
5. First position among the graduates of the entire The University of Jordan, 2011.
6. First position among the graduates of the entire Hebron University, 2008.
7. One of the best graduates of all Palestinian universities in 2008.

Publications

- [1] Bounds and majorization relations for the critical points of polynomials, *Linear Algebra Appl.*, 436, 2494 – 2503, 2012 (with F. Kittaneh).
- [2] Intervals of totally nonnegative matrices, *Linear Algebra Appl.*, 439, 3796 – 3806, 2013 (with J. Garloff).
- [3] Invariance of total nonnegativity of a tridiagonal matrix under element-wise perturbation, *Oper. Matrices*, 8 (1), 129 – 137, 2014 (with J. Garloff).
- [4] Improved tests and characterizations of totally nonnegative matrices, *Electron. J. Linear Algebra*, 27, 588 – 610, 2014 (with J. Garloff).
- [5] Invariance of total positivity of a matrix under entry-wise perturbation and completion problems, In: C. M. da Fonseca, D. V. Huynh, S. Kirkland, and V. K. Tuan, (Eds.), *Contemporary Mathematics*, Vol. 658, Amer. Math. Soc., Providence, RI, to appear in Feb. 2016 (with J. Garloff).

- [6] Total nonnegativity of matrices related to polynomial roots and poles of rational functions, *J. Math. Anal. Appl.*, 434, 780 – 797, 2016 (with J. Garloff and J. Titi).
- [7] Intervals of special sign regular matrices, *Linear and Multilinear Algebra*, 64, 1424-1444, 2016 (with J. Garloff).
- [8] A survey of classes of matrices possessing the interval property and related properties, *Reliable Computing*, 22, 1 – 10, 2016 (with J. Garloff and J. Titi).
- [9] Total nonnegativity of the extended Perron complement, *Linear Algebra Appl.*, 508, 214 – 224, 2016 (with J. Garloff).
- [10] Invariance of total nonnegativity of a matrix under entry-wise perturbation and subdirect sum of totally nonnegative matrices, *Linear Algebra Appl.*, accepted (with J. Garloff).

### Significant contributions

In [2], a conjecture which was posed by Prof. Jürgen Garloff in 1982 is settled. In this paper we combine an array of recent tools from distinct areas and we successfully bridge these facts to resolve this open problem. In [4], some notions which were employed in [2] are used to give an efficient determinantal criterion for totally nonnegative matrices and some characterizations of their subclasses. In [7], analogous results for another class of matrices are proved and a new conjecture is posed. In [6], these results are applied to the theory of Hurwitz (stable) polynomials and theory of rational functions to give simple proofs for some known results e.g., Markov's Theorem, and sufficient conditions for a given family of 'interval' rational functions and interval polynomials to be  $R$ -functions of negative type and Hurwitz, respectively.

### Talks in conferences

- [i] *Relations between the zeros and critical points of polynomials*, Third Palestinian Conference on Modern Trends in Mathematics and Physics, Hebron, Palestine, 16-18 July, 2012.
- [ii] *Intervals of sign regular matrices*, 8th Small Workshop on Interval Methods (SWIM 2015), Prague, Czech Republic, 9-11 June, 2015.
- [iii] *Total nonnegativity of matrices related to polynomial roots and poles of rational functions*, MAT TRIAD 2015, Coimbra, Portugal, 7-11 September, 2015.
- [iv] *Application of the Cauchon Algorithm to sign regular matrices*, 20<sup>th</sup> Conference of the International Linear Algebra Society (ILAS 2016), Leuven, Belgium, 11-15 July, 2016.
- [v] *Zeros and poles localization of polynomials and rational functions and total nonnegativity of structured matrices*, 7<sup>th</sup> European Congress of Mathematics (7ECM), Berlin, Germany, 18-22 July, 2016.
- [vi] *Zeros and poles localization of polynomials and rational functions and total nonnegativity of structured matrices*, Fifth Palestinian Conference on Modern Trends in Mathematics and Physics (PCMTMP-V), Jenin, Palestine, 31 July - 2 August, 2016.

### Membership in scientific organisations

International Linear Algebra Society (ILAS)

### Journal reviews

1. Linear Algebra and its Applications Journal.
2. Mathematical Reviews.

### References

1. Dr. Jürgen Garloff, Professor of Mathematics at the University of Konstanz and Institute for Applied Research, University of Applied Sciences/ HTWG, Konstanz, Germany.  
Email: juergen.garloff@htwg-konstanz.de
2. Dr. Shaun M. Fallat, Professor of Mathematics at the University of Regina, Regina, Canada.  
Email: shaun.fallat@uregina.ca
3. Dr. Fuad A. Kittaneh, Professor of Mathematics at The University of Jordan, Amman, Jordan.  
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