

## Curriculum Vitae Khaled Qazaqzeh

### Current Address

Department of Mathematics  
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### Permanent Address

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### Education

#### Ph.D, Mathematics

Louisiana State University, Summer 2006.  
Thesis Advisor: Patrick Gilmer.  
Title: Topics in Quantum Topology.

#### M.S, Mathematics

Louisiana State University, Spring 2002.

#### B.S, Mathematics

Yarmouk University, Fall 1999.

### Personal Information

Gender:- Male  
Date of Birth:- 15 -12 -1977  
Place of Birth:- Irbed - Jordan  
Nationality:- Jordanian  
Country of Residence:- Kuwait  
Marital Status:- Married

### Research Interests

Quantum invariants of 3-manifolds, topological quantum field theories, Kauffman bracket skein modules, quasi-alternating links and invariants of knots and links, character varieties of some families of groups, periodic links and Kauffman polynomial.

## Teaching Experience and Employment History

- (1) Teaching and research assistant at LSU during my graduate studies from August 2000 till July 2006. My duties as a teaching assistant varied from grading, proctoring and teaching, but I taught courses as College Algebra, Plane Trigonometry, Calculus I, and Calculus II.
- (2) Lecturer at Yarmouk University from 10/09/2006 till 23/09/2007.
- (3) Assistant professor at Yarmouk University from 24/09/2007 to 15/04/2012.
- (4) Associate professor at Yarmouk University from 16/04/2012 till now.
- (5) Leave of absence from Yarmouk University from 08/09/2013 till now.
- (6) Assistant professor at Kuwait University from 04/09/2013 to 14/02/2018.
- (7) Associate professor at Kuwait University from 15/02/2018 till now.
- (8) I taught all courses of Calculus, Discrete Mathematics, Linear Algebra I, Set Theory, Linear Algebra II, Abstract Algebra I, Abstract Algebra II, Number Theory and graduate courses in Homological Algebra, Algebraic Number Theory and Algebraic Topology (Homotopy Theory) at Yarmouk University.
- (9) I taught all courses of Calculus, a course of BioMathematics, Linear Algebra, the first course of Geometry, Geometry I and the first course of Topology at Kuwait University. I will be teaching Calculus I, and Geometry I at Kuwait University for the spring of the academic year 2020/2021.

## Some of the Referees comments on the Promotion at Yarmouk University

- . . . . It is original and definitely makes new contributions to Low-Dimensional Topology.
- I was impressed by Dr. Qazaqzeh's adroit combination of techniques from geometric group theory, knot theory, and algebraic geometry to the end of making a very nice original contribution to Low-Dimensional Topology.
- . . . , Dr. Qazaqzeh here develops a very delicate analysis of the character varieties for some specific manifolds, in particular for the complements of 2-bridge links. I was particularly interested in reading about his approach and his computations, as it is closely related to some aspects of my current research and as I find these computations very useful in my own work.
- . . . , it is clear that Dr. Qazaqzeh leads an active and consistent research program. The problems that he is addressing are centered in areas that currently are of great interest to the international mathematical community. Another thing that strikes me is that his more recent articles are stronger and more original than his earlier ones. I of course take this as a very positive indication of his future productivity. It is also clear to me that he has gained scientific independence; a significant part of his research program is the natural continuation of his graduate work, but his more recent work displays many new original techniques and ideas, some of them quite remote from his earlier areas of expertise. His articles have appeared in good journals. In particular, the *International Journal of Mathematics*, *Communications in Contemporary Mathematics* and the *Kobe Journal of Mathematics* are very mainstream journals with strong publication standards.

**With this research record, Dr. Qazaqzeh would receive tenure in many American research universities or be appointed to a permanent position in it.**

- Dr. Qazaqzeh's papers are mainly single authored which proves beyond any doubt that he is the main contributor of his published work. His research complements work done France, Switzerland and Denmark, and of course in the US. I am certain that working on abstract mathematical problems while being in his home institution is not an easy task. In fact,

Dr. Qazaqzeh is succeeding to push his research in the recent years. Dr. Qazaqzeh is a great example of a foreign-educated research mathematician who chose the difficult way to go back to his home country and pursue research in Mathematics. I can assure you that his career is in good track, and he could have had a position in one of the many universities in the US. Dr. Qazaqzeh is a beacon of research in TQFT in Jordan, and I would try to keep satisfied in his home institution. Keeping people like Dr. Qazaqzeh in Yarmouk University is a great investment both for immediate pursue of science in Jordan, but also for the improvement of society at large. Dr. Qazaqzeh helps put Jordan on the map as far as Topology is concerned.

## Publications

- (1) K. Qazaqzeh and N. Chbili, On Khovanov Homology of Quasi-alternating Links, submitted for publication.
- (2) N. Chbili, and K. Qazaqzeh, On the Jones Polynomial of Quasi-alternating Links, *Topol. Appl.*, 264 (2019): 1-11.
- (3) K. Qazaqzeh, A. Aboufattoum, E. A. Elsakhawy and A. T. Diab, Homfly Polynomial of Knotted Trivalent Plane Graphs, *Asian Research Journal of Mathematics*, 7(2) (2017): 1-7.
- (4) K. Qazaqzeh, A. Aboufattoum, K. Istvan and E. A. Elsakhawy, Kauffman and Homfly polynomials of periodic links, *Bull. Korean Math. Soc.*, 55 (2018), No. 3, 799-808.
- (5) K. Qazaqzeh, and E. Mansour, On Kanenobu knots, *Kobe J. Math.* 33 (2016), 31-52.
- (6) K. Qazaqzeh, M. Yasien, and M. Abu Qamar, The Jones polynomial of rational links, *Kodai Math. J.* 39 (2016), 59-71.
- (7) M. Yasien, K. Qazaqzeh, and J. Shtyat, The unknotting number of a family of knots, *IJAPM.* 105 (2) (2015), 133-141.
- (8) K. Qazaqzeh, N. Chbili, A new obstruction of quasi-alternating links, *Algebr. Geom. Topol.* 15 (3) (2015), 1847-1862.
- (9) K. Qazaqzeh, N. Chbili, and B. Qublan, Characterization of quasi-alternating Montesinos links, *J. Knot Theory and its Ram.* 24 (01) (2015), 1550002 (13 pages).
- (10) K. Qazaqzeh, I. Al-Darabsah, and A. Quraan, The signature of rational links, *New York J. Math.* 20, (2014), 183-194.
- (11) K. Qazaqzeh, B. Qublan, and A. Jaradat, A remark on the determinant of quasi alternating links, *J. Knot Theory and its Ram.* 22 (6) (2013), 1350031 (13 pages).
- (12) K. Qazaqzeh, Integral lattices of the  $SU(2)$ -TQFT-modules, *Kobe J. Math.* 30 (2013), 19-32.
- (13) K. Qazaqzeh, The character variety of a family of one-relator groups, *Internat. J. Math.* 23 (1) (2012), 1250015 (12 pages).
- (14) K. Qazaqzeh, The character variety of a class of rational links, *Turk. J. Math.* 36 (2012), 41-46.
- (15) K. Qazaqzeh, The Khovanov homology of a family of three-column pretzel links, *Comm. Contemp. Math.* 13 (5) (2011), 813-825.
- (16) K. Qazaqzeh, The  $I_p$  quantum invariant of periodic 3-manifolds, *Jordan J. Math. Stat.* 2 (2) (2009), 67-72.
- (17) P. Gilmer, K. Qazaqzeh, Quantum invariants and free  $\mathbb{Z}_p^2$ -actions on 3-manifolds, *Acta Math. Viet.* 33 (3) (2008), 279-290.
- (18) K. Qazaqzeh, The Witten-Reshetikhin-Turaev invariants of Lens spaces. *Abhath Al-Yarmouk: Basic Sci. and Eng.*, 17 (2) (2008), 425-435.

- (19) K. Qazaqzeh, Periodic 3-manifolds and modular categories, *J. Knot Theory and its Ram.* 17 (5) (2008), 529-536.
- (20) K. Qazaqzeh, Integral basis for certain TQFT-modules of the Torus, *Math. Proc. Camb. Phil. Soc.* 143 (2007), 669-684.
- (21) P. Gilmer, K. Qazaqzeh, The parity of the Maslov index and the even cobordism category, *Fund. Math.* 188 (2005), 95-102.

### **Academic Honors, Travel Awards, Fellowships and Research Projects**

- (1) Travel Grant from New York University at Abu Dhabi to participate in NYUAD Regional Interdisciplinary Workshop on Geometry, Topology, and Physics.
- (2) Travel Grant from Kuwait University of the amount of *KW*1800 to participate in Glances @ Manifolds low-&-high dimensional at Jagiellonian University, Kraków, Poland from 17/7/2015 to 20/7/2015.
- (3) NANUM Travel Grant from NIMS to attend SEOUL ICM 2014 of the amount of *W*1,600,000.
- (4) Research grant from Yarmouk University of the amount of 1350 JD to study three manifold invariants over rings of finite characteristic from 15/08/2012 to 15/06/2013.
- (5) Grant from the Max Planck Institute for Mathematics of the amount 1257 Euro to participate in a special activity on the topic of "4-manifolds and their combinatorial invariants" organized by Mike Freedman, Matthias Kreck and Peter Teichner in the period from May 20, 2013 until June 01, 2013.
- (6) Grant from CIMPA to participate in the summer research school titled Symplectic Geometry and Geometric Topology at Meknes, Morocco from 1/05/2012 to 01/06/2012.
- (7) Travel Grant from Yarmouk University to participate in the fourth International Conference on Mathematical Sciences, ICM2012, at Alin, UAEU from 11/03/2012 to 14/03/2012.
- (8) Grant from the Max Planck Institute for Mathematics of the amount 2100 Euro to spend three weeks at the institute from 16/01/2012 to 05/02/2012.
- (9) Research grant from Yarmouk University of the amount of 1400 JD to study quasi-alternating links from 04/10/2011 to 04/08/2012.
- (10) Grant from Rényi Institute to participate in the summer school titled Topology of Manifolds, Rényi Institute, Budapest, August 15-19, 2011.
- (11) Junior associate at the Abudus Salam international center for theoretical Physics (ICTP) from 01/01/2009 to 31/12/2014.
  - (a) Stay at the ICTP from 17/06/2012 to 15/09/2012 with travel support and living allowance.
  - (b) Stay at the ICTP from 05/08/2011 to 17/09/2011 with travel support and living allowance.
  - (c) A grant of 400 Euro worth of books for the years of 2010, 2011, 2012, 2013, and 2014.
- (12) Short term visiting fellowship for two months at the ICTP with theme of p-adic Analysis and Low Dimensional Topology from 10/06/2009 to 09/08/2009.
- (13) Grant from Yarmouk University to participate in the special session on Knots and 3-Manifolds invariants in the AMS sectional meeting, Baton Rouge, Louisiana, March 2008.
- (14) Grant from the ICTP and Yarmouk University to participate in the International Conference of Quantum Topology Hanoi, Vietnam, August 2007.
- (15) Grant from the department of Mathematics at LSU to participate in the special session on Quantum Invariants of Knots and 3-Manifolds in the AMS national meeting, San Antonio, Texas, January 2006.

- (16) Grant from adviser's grant and the LSU graduate School to participate in Knots in Washington XXI, George Washington University, Washington, December 2005.
- (17) Grant from AMS, IMS, SIAM and LSU graduate school to participate in the Quantum Topology - Contemporary Issues and Perspectives conference, Snowbird, Salt lake city, Utah, June 2005.
- (18) Grant from my adviser's grant and the LSU graduate School to participate in the special session on Invariants of links and 3-Manifolds in the AMS sectional meeting, Lubbock, Texas, April 2005.
- (19) Graduate School Enhancement Award, Louisiana State University, Jan 2000- Jan 2004.
- (20) Graduate Assistantship, Louisiana State University, Aug 2000- Aug 2006.
- (21) Graduate Assistantship, Yarmouk University-Jordan, Feb 1999- Jun 1999.
- (22) Royal Watch, after I have been ranked the first among my colleagues in the undergraduate program.

### Presentations and Talks

- Kuwait University-Department of Mathematics Seminar and Colloquium, *On Quasialternating Links*, October 9, 2018.
- Invited talk at "NYUAD Regional Interdisciplinary Workshop on Geometry, Topology, and Physics" titled "An Obstruction of Quasialternating Links" at NYU at Abu Dhabi, October 21-23, 2018.
- Kuwait University-Department of Mathematics Seminar and Colloquium, *Khovanov Homology*, December 9, 2015.
- Contributed talk at "Glances @ Manifolds low-&-high dimensional" titled "The Kauffman polynomial of periodic links" at Jagiellonian University, Kraków, Poland from 17/7/2015 to 20/7/2015.
- Contributed talk at "A Satellite Conference of Seoul ICM 2014: Knot and Low Dimensional Manifolds" titled "A New Obstruction of Quasi Alternating Links", August 22-26, 2014.
- Short communication at SEOUL ICM 2014 titled "Further Study of Kanenobu knots", August 13-21, 2014.
- Kuwait University-Department of Mathematics Seminar and Colloquium, *A Tour in Knot theory*, April 2, 2014.
- Kuwait University-Department of Mathematics Seminar and Colloquium, *The character variety of a family of one relator groups*, November 27, 2013.
- Two lectures at the summer research school titled Symplectic Geometry and Geometric Topology, Meknes, Morocco, May 21 - June 1st.
- Invited talk the fourth International Conference on Mathematical Sciences, ICM2012 at Alin, UAE, *A new property of quasi-alternating links*.
- Yarmouk University-Department of Mathematics seminar, *The character variety of a family of one relator groups*, Irbed-Jordan, April 2011.
- Invited talk in the special session on Knot and 3-Manifold Invariants in the AMS sectional meeting, *The  $I_p$  Quantum Invariant of Periodic 3-Manifolds*, Baton Rouge, Louisiana, March 2008.
- International conference on Quantum Topology, *Integral Lattices of the  $SU(2)$ -TQFT-Modules*, Hanoi, Vietnam, August 2007.
- Yarmouk University- Department of Mathematics seminar, *The Jones Polynomial*, Irbed, Jordan, November 2006.

- Invited talk in the special session on Quantum Invariants of Knots and 3-Manifolds at the AMS National Meeting, *Integral Bases for Certain TQFT-Modules of the Torus*, San Antonio, Texas, January 2006.
- Knots in Washington XXI, *Integral Bases for Certain TQFT-Modules of the Torus*, George Washington University, Washington, December 2005.
- Quantum Topology-Contemporary Issues and Perspectives conference, *Integral Bases for the  $SU(2)$ -TQFT-Modules in Genus one*, Snowbird, Salt lake city, Utah, June 2005.
- Invited talk in the special session on Invariants of links and 3-Manifolds in the AMS sectional meeting, *Integral Bases for the  $SU(2)$ -TQFT-Modules in Genus one*, Lubbock, Texas, April 2005.
- LSU Topology Seminar, *Integral Bases for the  $SU(2)$ -TQFT-Modules in Genus one*, Baton Rouge, Louisiana, March 2005.
- LSU Graduate Student Seminar, *The Parity of the Maslov Index*, Baton Rouge, Louisiana, November 2004.
- LSU Topology Seminar, *Jones and Alexander Polynomials via Braid Groups*, Baton Rouge, Louisiana, October 2001.

### Conferences and Schools

- NYUAD Regional Interdisciplinary Workshop on Geometry, Topology, and Physics, NYU at Abu Dhabi, October 21-23, 2018, Abu Dhabi, UAE.
- Swiss knots, Low dimensional topology and knot theory, Mathematical Institute of the University of Bern, June 7-9, 2017, Bern, Switzerland.
- Invariants in Low Dimensional Geometry, Gazi University, August 10-14, 2015, Ankara, Turkey.
- Workshop on Invariants of Knots, Surfaces, and 3-Manifolds, Gazi University, August 3-7, 2015, Ankara, Turkey.
- Glances @ Manifolds low-&-high dimensional, Jagiellonian University, July 17-20, 2015, Kraków, Poland.
- A Satellite Conference of Seoul ICM 2014: Knot and Low Dimensional Manifolds, August 22-26, 2014, BEXCO Convention & Exhibition Center II, Busan, South Korea.
- SEOUL ICM 2014, International Congress of Mathematics, August 13 - 21, 2014 Coex, Seoul, South Korea.
- Summer research school titled Symplectic Geometry and Geometric Topology, Meknes, Morocco, May 21 - June 1st, 2012.
- The fourth International Conference on Mathematical Sciences, ICM2012, at Alin, UAE, March 11-14, 2012.
- Summer school, Topology of Manifolds, Rényi Institute, Budapest, Hungary, August 15-19, 2011.
- AMS Sectional Meeting, Louisiana State University, Baton Rouge, Louisiana, March 2008.
- International Conference on Quantum Topology, Hanoi, Vietnam, August 2007.
- AMS National Meeting, San Antonio, Texas, January 2006.
- Knots in Washington XXI, George Washington University, Washington, December 2005.
- Quantum Topology-Contemporary Issues and Perspectives, Snowbird, Salt Lake City, Utah, June 2005.
- 3-Manifolds and Knot Theory Conference, University of Texas, Austin, Texas, May 2005.
- AMS Sectional Meeting, Texas Tech University, Lubbock, Texas, April 2005.
- Port City Conference, University of South Alabama, Mobile, Alabama, February 2005.

- The Topology of Manifolds of Dimensions 3 and 4, University of Texas, Austin, Texas, May 2003.
- AMS Sectional Meeting, Louisiana State University, Baton Rouge, Louisiana, March 2003.
- The Spring Topology and Dynamics Conference, University of Texas, Austin, Texas, March 2002.

### Graduate Students

- A. Almalkawi with a Master thesis titled, *The Tutte polynomial in Knot Theory*.
- M. Z. Abu-Qamar with a Master thesis titled, *The Jones and the Tutte polynomials of rational links*.
- A. Quraan with a Master thesis titled, *The Signature of rational links*.
- B. Qublan with a Master thesis titled, *Characterization of Quasi-alternating Montesinos links*.
- E. Mansour with a Master thesis titled, *A study of Kanenobu Knots*.
- M. Bani Mlhem with a Master thesis titled, *Three manifold invariants over rings of finite characteristic*.
- A. Aboufattoum with PhD thesis titled, *Study of Some Problems in Knot Theory*.

### Defense and Proposal Committees

- Mustafa Hajij with Master thesis titled, *The Jones polynomial in the solid Torus*.
- Ahmad Hamdan with proposal titled, *Properties of certain automorphisms of fields of rational functions*.

### Refereeing/Referee for the following journals

- Jordan Journal of Mathematics and Statistics.
- Journal of Taibah University for Science.
- Kuwait Journal of Science.

### Languages

Written and spoken Arabic and English.

### Computer experience

Experience with Singular, Mathematica, Matlab and at some point I had very good experience with Magma.

### Service

- Editorial board member of Pure and Applied Mathematics Journal.
- A reviewer for Zentralblatt MATH.
- I have participated in many committees at the Mathematics Department at Yarmouk University such as the hiring, the seminar, and curriculum committees.

### Memberships

- August 2000 - August 2006, American Mathematical Society.
- August 2003 - present, The National Society of Colligate Scholarships.

**References**Research Advisor and Reference

Patrick Gilmer

A.K. and Shirley Barton Professor

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