

# Mentor Stafa

Tulane University  
Department of Mathematics  
6823 St. Charles Ave  
New Orleans, LA 70118

tel: +1 (504) 865-5727  
fax: +1 (504) 865-5063  
e-mail: mstafa@tulane.edu  
web: www.math.tulane.edu/~mstafa

## Education & Academic Appointments

2017–	Professor of Practice	Tulane University, New Orleans
2016–2017	Postdoctoral Fellow	Indiana University - Purdue University Indianapolis
2015–2016	Postdoctoral Researcher	ETH Zürich, Switzerland
2013–2015	Postdoctoral Fellow	Tulane University, New Orleans
2008–2013	Ph.D. Mathematics	University of Rochester, New York

## Research Interests

Algebraic topology, topology and stability of representation spaces in Lie groups, toric topology, applications

## Honors, Awards & Grants

2018	AMS-NSF International Congress of Mathematicians Travel Grant
2015–2016	Swiss Government Excellence Postdoctoral Scholarship
2014 Nov.	Tulane Postdoctoral Travel Grant
2013–2015	Postdoctoral Fellowship under Prof. Komendarczyk DARPA Grant
2012 Fall	Dean's Teaching Fellowship, University of Rochester

## Research Visits

May 2017	University of Rochester, New York	1 week
May 2012	Institute of Advanced Studies, Princeton	1 week

## Publications

- [1] D. Ramras and M. Stafa. Homological stability for commuting elements in Lie groups. *Int. Math. Res. Not. IMRN*, 2020, 76 pages
- [2] M. Stafa. Poincaré series of character varieties for nilpotent groups. *J. Group Theory* (2019), vol. 22, no. 3, 419–440.
- [3] D. Ramras and M. Stafa. Hilbert-Poincaré series of nilpotent representations in Lie groups. *Math. Zeit.* (2019), vol. 292, no. 1-2, 591–610.
- [4] M. Stafa. Polyhedral products, flag complexes and monodromy representations. *Topology Appl.* 244 (2018) pp. 12-30
- [5] F. R. Cohen and M. Stafa. A survey on spaces of homomorphisms to Lie groups. *Configurations Spaces: Geometry, Topology and Representation Theory*, Springer INdAM series, vol. 14, 361-379, 2016

- [6] F. R. Cohen and M. Stafa. On spaces of commuting elements in Lie groups. *Math. Proc. Cambridge Phil. Soc.* **161**(3) (2016), pp. 381-407
- [7] M. Stafa. On monodromy representations in Denham-Suciu fibrations. *J. Pure Appl. Algebra*, **219** (2015), no.8, 3372-3390.
- [8] M. Stafa. On the fundamental group of certain polyhedral products. *J. Pure Appl. Algebra*, **219** (2015), no. 6, 2279-2299.
- [9] M. Stafa. *On Polyhedral Products and Spaces of Commuting Elements in Lie Groups*. PhD thesis, University of Rochester, ProQuest, 2013.

## Seminar, Colloquium & Conference Presentations

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|---|-------------------|
| 1. Fields Institute: Polyhedral Products in Homotopy Theory (invited)     | Jan. 20-24, 2020  |
| 2. AMS JMM Special Session, Baltimore MD - with D. Ramras                 | Jan. 19, 2019     |
| 3. Canadian Mathematical Society Winter Meeting, Vancouver, Canada        | Dec. 7-10, 2018   |
| 4. Lloyd Roeling Math Conference - University of Louisiana Lafayette      | Nov. 11, 2017     |
| 5. Tulane University, Geometry-Topology Seminar                           | Oct. 5, 2017      |
| 6. Princeton-Rider Workshop on the Homotopy Theory of Polyhedral Products | May 29, 2017      |
| 7. AMS Sectional Meeting, Indiana University Bloomington                  | Apr. 2, 2017      |
| 8. ETH Zürich, Geometry Seminar   | Mar. 15, 2017     |
| 9. Purdue University, Topology Seminar                                    | Mar. 9, 2017      |
| 10. University of Louisiana Lafayette, Colloquium                         | Mar. 8, 2017      |
| 11. Princeton University, Algebraic Topology Seminar                      | Feb. 23, 2017     |
| 12. Canadian Mathematical Society Winter Meeting, Niagara Falls, ON       | Dec. 4, 2016      |
| 13. Joint IU/PU/IUPUI Topology Seminar                                    | Nov. 12, 2016     |
| 14. IUPUI Modern Analysis and Geometry Seminar                            | Nov. 1, 2016      |
| 15. IUPUI Modern Analysis and Geometry Seminar                            | Sep. 6 & 13, 2016 |
| 16. Universität Freiburg, Combinatorics Seminar                           | Dec. 17, 2015     |
| 17. ETH Zürich, Geometry Seminar  | Dec. 2, 2015      |
| 18. ETH Zürich, Informal Geometry Seminar                                 | Nov. 19, 2015     |
| 19. PIMS: Combinatorial Constructions in Topology, University of Regina   | Aug. 20, 2015     |
| 20. Union College Colloquium  | Apr. 3, 2015      |
| 21. Centro de Giorgi, "Perspectives in Lie Theory", Pisa, Italy           | Feb. 16, 2015     |
| 22. ÉPFL, Topology Seminar, Lausanne, Switzerland                         | Jul. 31, 2014     |
| 23. Young Topologists Meeting 2014, University of Copenhagen, Denmark     | Jul. 4, 2014      |
| 24. University of Louisiana at Lafayette, Topology Seminar                | Mar. 21, 2014     |
| 25. Tulane University, Geometry-Topology Seminar                          | Oct. 2013         |
| 26. Tulane University, Geometry-Topology Seminar                          | Apr. 2013         |
| 27. 38th Annual New York Regional Grad Math Conf., Syracuse University    | Apr. 2013         |

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| 28. University of Rochester, Topology Seminar                            | Nov. 2012    |
| 29. Binghamton Univ. Graduate Student Conference on Algebra and Topology | Nov. 3, 2012 |
| 30. University of Rochester, Graduate Student Seminar                    | Apr. 2012    |
| 31. University of Rochester, Topology Seminar                            | Oct. 2011    |

## Other Conferences & Workshops Attended

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|--|------------------------|
| 1. MSRI Teaching and Teaching Workshop   | June 10-12, 2019       |
| 2. International Congress of Mathematicians, Rio de Janeiro, Brazil  | August 1-9, 2018       |
| 3. SwissMap: Women in geometry and topology, ETH Zürich  | 14-16 June 2017        |
| 4. ICERM: Topology and Geometry in a Discrete Setting, Providence RI   | Nov. 30-Dec.2, 2016    |
| 5. Midwest Topology Seminar, Purdue University, IN   | Sep. 17-18, 2015       |
| 6. Manifolds and Groups, Ventotene (LT), Italy   | Sep. 7-12, 2015        |
| 7. International Conference on Combinatorial and Toric Homotopy<br>IMS National University of Singapore                | Aug. 24-28, 2015       |
| 8. Configuration Spaces: Geometry, Topology and Rep. Theory, Cortona, Italy  | Sep. 1-5, 2014         |
| 9. Topology and Geometry of Networks and Discrete Metric Spaces<br>IMA at the University of Minnesota, Minneapolis, MN | Apr. 28 - May 2, 2014  |
| 10. Algebraic Topology: Introductory Workshop - MSRI, Berkeley, CA   | Jan. 27-31, 2014       |
| 11. AMS-MAA Joint Mathematics Meetings, San Diego, CA  | Jan. 9-12, 2013        |
| 12. The Legacy of Daniel Quillen: K-theory and Homotopical Algebra, MIT  | October 6-8, 2012      |
| 13. Panorama of Topology, Princeton University   | May 8-11, 2012         |
| 14. 50th Cornell Topology Festival, Cornell University, Ithaca NY  | May 4-7, 2012          |
| 15. Graduate Student Topology Conference<br>Indiana University Bloomington IN  | Mar. 31 - Apr. 1, 2012 |
| 16. Princeton-Rider Workshop on Homotopy Theory and Toric Spaces<br>Princeton University and Rider University          | Feb. 23-25 2012        |
| 17. Configuration spaces, braids and applications<br>Tulane University, New Orleans LA                                 | Jan. 13-15 2012        |
| 18. 2011 Fall Eastern Sectional Meeting - Cornell University, Ithaca NY  | Sep. 10-11, 2011       |
| 19. Configuration Spaces: Geometry, Combinatorics and Topology<br>CRM Ennio De Giorgi, Pisa, Italy                     | Jun. 20-25, 2010       |
| 20. Applications of Geometry to Topology and Physics<br>University of Rutgers Newark, Newark NJ                        | Nov. 7-9, 2008         |

## Course Development

Developed **Full Online** courses for Tulane University to use during the Covid-19 pandemic and beyond:

- MATH 1210 Calculus I
- MATH 1220 Calculus II
- MATH 1150 Long Calculus I
- MATH 1160 Long Calculus II
- MATH 6660 Training in Math Teaching for TAs

## Teaching Experience

### *Tulane University*

- MATH 7020 Topology II – Algebraic Topology Spring 2021
- MATH 1220 Calculus II Spring 2021
- MATH 6660 Training in Math Teaching for TAs Fall 2020
- MATH 1210 Calculus I Fall 2020
- MATH 1110 Probability & Statistics Summer 2020
- MATH 1160 Long Calculus II Spring 2020
- MATH 1150 Long Calculus I Fall 2019
- MATH 1210 Calculus I Fall 2019
- MATH 1150 Long Calculus I Summer 2019
- MATH 4920 Linear Representations of Finite Groups (Independent Study) Spring 2019
- MATH 1210 Calculus I ( $\times 2$ ) Fall 2018
- MATH 1150 Long Calculus I Summer 2018
- MATH 2210 Honors Calculus III Spring 2018
- MATH 4120/6120: Abstract Algebra II Spring 2018
- MATH 4910 Finite Reflection Groups (Independent Study) Fall 2017
- MATH 3110 Abstract Algebra I Fall 2017
- MATH 1310 Honors Consolidated Calculus Fall 2017
- MATH 1210 Calculus I Fall 2017

### *Indiana University - Purdue University Indianapolis*

- MATH 166 Analytic Geometry and Calculus II Summer 2017
- MATH 572 Introduction to Algebraic Topology (graduate) Spring 2017
- MATH 165 Analytic Geometry and Calculus I Fall 2016
- MATH 166 Analytic Geometry and Calculus II Fall 2016

### *Tulane University*

- MATH 2210 Calculus III (multivariable) Spring 2015

- MATH 1220 Calculus II Spring 2015
- MATH 1310 Consolidated Calculus Fall 2014
- MATH 7980 Elements of Homotopy Theory (with Prof. Kwasik) Spring 2014

*University of Rochester*

- MTH 235 Linear Algebra Summer 2013
- MTH 142 Calculus II Fall 2012
- MTH 164 Multivariable Calculus Summer 2012
- OMS 102 Calculus (head instructor) Summer 2012
- MTH 141 Calculus I Summer 2010
- MTH 141 Calculus I Summer 2009

*University of Rochester (teaching assistant)*

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|---|--|
| • Point Set Topology (Honors) (Spring 2013)     | • Multivariable Calculus (Spring 2010)   |
| • Linear Alg.& Diff. Equations (Spring 2013)    | • Logic and Set Theory (Fall 2009)       |
| • Multivariable Calculus (Spring 2012)          | • Calculus II (Fall 2009)                |
| • Functions of a Real Variable I (Fall 2011)    | • Introduction to Topology (Spring 2009) |
| • Qualitative Ordinary Diff. Eq. (Fall 2011)    | • Honors Calculus IV (Spring 2009)       |
| • Differentiable Manifolds (grad) (Spring 2011) | • Operations Research I (Fall 2008)      |
| • Calculus II (Spring 2011)                     | • Differential Geometry I (Fall 2008)    |
| • Differential Equations (Fall 2010)            |  |

**Student Mentorship – Tulane University**

**Undergraduate:**

- David Renke – Finite Reflection Groups .....2017-2018
- David Graf – Linear Representations of Finite Groups .....Spring 2019
- Marina Pirzada .....2020-2021

**Graduate:**

- Training of Teaching Assistants ..... 2018-now

**Conference & Seminar Organization**

- *Co-organizer* – Geometry–Topology Seminar, Tulane University, ..... 2018–now
- *Co-organizer* – Special session "Representation Spaces and Toric Topology" ..... May 6-7, 2017  
AMS Eastern Sectional Meeting, Hunter College, New York NY
- *Co-ordinator* – Geometry Seminar, ETH Zürich ..... 2015–2016
- *Co-organizer* – Geometry–Topology Seminar, Tulane University, ..... 2013–2015
- *Organizer* – Graduate Student Seminar, University of Rochester, ..... 2011–2012

## Service on Committees & Boards

- **Tulane University** - University Level
  - SSE Online/Hybrid Teaching Task Force ..... 2020
  - CELT School of Science & Engineering Faculty liaison ..... 2018–now
- **Tulane University** - Department Level
  - PhD Thesis Prospectus Committee: Diego Villamizar ..... (2020)
  - PhD Thesis Defense Committee: Robin Brooks ..... (2020)
  - PhD Oral Exam Committee: Robin Brooks , Abu Thomas ..... (2018)
  - Undergraduate Studies Committee - Math Department ..... 2017–now
- **ETH Zürich:**
  - *Member* – Verein des akademischen Mittelbaus (VMM) ..... 2015–2016
- **University of Rochester**
  - *Reviewer* – GOC Conference Funding Applications, ..... Fall 2012

## Service to Profession

- *Reviewer* for American Mathematical Society *Mathematical Reviews* ..... 2017–now
- *Referee* for articles in:
  - Transactions of the American Mathematical Society
  - Journal of the London Mathematical Society
  - Algebraic and Geometric Topology

## Math/Science Outreach Activities

- Event organizer at BATS (Boys at Tulane in STEM) for Middle Schools ..... Sept. 29, 2018
- Talk at Tulane Math Club ..... April 26, 2018
- Talk at Tulane AWM/AMS Seminar ..... Oct. 26, 2017

- *Program assistant* – David T. Kearns Center for Leadership and ..... Spring 2012  
Diversity in Arts, Sciences and Engineering; assisted low-income,  
first-generation college, and underrepresented minority students,  
University of Rochester

**Professional Training**

- Sparking Success – Faculty Development Conference – Tulane University ..... Dec. 10-11, 2020
- Online Teaching Training by CELT and the ILC at Tulane University ..... Summer 2020
- MSRI: Improving the Preparation of Grad Students to Teach Undergrad Math ..... June 10-12, 2019
- Future Faculty Workshop: "The Faculty Role", University of Rochester ..... Oct. 2012

**Professional Memberships**

- American Mathematical Society