

# Cigole Thomas

Curriculum vitae

---

Department of Mathematics,  
George Mason University  
Fairfax, 22030 VA, USA

Nationality: Indian  
E-Mail : cthoma40@gmu.edu  
Office: Room 4310, Exploratory Hall

---

## Education

---

Present      Ph.D. Candidate | George Mason University, Fairfax, Virginia  
                 Advisor: Prof. Sean Lawton  
2016 - 2017   MS in Mathematics | George Mason University, Fairfax, Virginia  
2010 - 2015   Integrated BS - MS in Mathematics |  
                 Indian Institute of Science Education and Research Mohali (IISER Mohali), India

---

## Research Interests

---

Algebraic Geometry | Character Varieties over Finite Fields |  
Dynamics of Mapping Class Group Action

---

## Research Experience

---

Summer 2018 - Present      **PhD Thesis Research**  
                 Advisor: Prof. Sean Lawton  
                 Topic: *Asymptotic Transitivity on a Rank 2 Character Variety of a one-holed torus*

June 2019 - May 2020      **Graduate Research Assistant**  
                 NSF - Improving Undergraduate STEM Education(IUSE) project  
                 George Mason University (GMU), Fairfax, VA  
                 Supervisors: Dr. Robert Sachs and Dr. Jill Nelson

Aug 2018 - Aug 2019      **Graduate Research Assistant**  
                 Industrial Immersion Program (IIP), George Mason University  
                 Topic: *Learning Algebraic Varieties*  
                 Advisor: Prof. Sean Lawton and Dr. Jeff Byers (Naval Research Academy)

Spring 2016 - Fall 2018      **Graduate Student Intern**  
                 Mason Experimental Geometry Lab, GMU  
                 Advisor: Prof. Sean Lawton  
                 Project: *Arithmetic Dynamics of Moduli Spaces*

June 2015 - August 2015      **Graduate Student Intern**  
                 Research Experience for Graduate Student(REGS) by GEAR  
                 Mason Experimental Geometry Lab, GMU  
                 Advisor: Dr. Christopher Manon  
                 Project: *Experiments with Characteristic Varieties*

May 2014 - May 2015      **MS Thesis Research**  
                 Indian Institute of Science Education and Research Mohali, India  
                 Advisor: Dr. Krishnendu Gongopadhyay  
                 Topic: *Decomposition of complex hyperbolic isometries by involutions.*

---

## Teaching Experience

---

Spring 2020	Graduate Teaching Assistant	Math 114 Analytic Geometry and Calculus II
Fall 2019	Graduate Teaching Assistant	Math 114
Summer 2019	Graduate Student Lecturer	Math 113 Analytic Geometry and Calculus I
Summer 2018	Graduate Student Lecturer	Math 125 Discrete Mathematics I
Spring 2018	Graduate Teaching Assistant	Math 113
Fall 2017	Graduate Teaching Assistant	Math 114
Summer 2017	Graduate Student Lecturer	Math 108 Introductory Calculus with Business Applications
Spring 2017	Graduate Teaching Assistant	Math 114
Fall 2016	Graduate Teaching Assistant	Math 114
Summer 2016	Graduate Student Lecturer	Math 108
Spring 2016	Graduate Teaching Assistant	Math 114

---

## Preprints and Publications

---

- (1) G. Gongopadhyay and C.Thomas. Decomposition of complex hyperbolic isometries by involutions. Linear Algebra and its Applications Volume 500, 1 July 2016, Pages 63-76.  
DOI: <https://doi.org/10.1016/j.laa.2016.03.011>
- (2) Co-author of poster presented on Evolutionary Ecology Conference conducted on June 21-25, 2013 in Utah titled *Mimicry on the wing: Flight morphology and kinematics in a mimetic butterfly and its model*.

---

## Awards and Achievements

---

- Summer 2020: Summer Research Fellowship instituted by Office of Provost, George Mason University.
- Aug 2019 - May 2020: Selected as Graduate Research Assistant for the project, NSF IUSE (Improving Undergraduate STEM Education) at GMU.
- Aug 2018 - Aug 2019: Recipient of Industrial Immersion Fellowship (IIP) funded by George Mason University's Provost Graduate Education Office .
- May 2018: TC Lim Award for Excellence in Teaching by Department of Mathematics, GMU.
- May 2016: INSPIRE Fellowship for PhD instituted by Department of Science and Technology, Government of India (Declined)
- July 2015 - August 2015: Participant of the Research Experience for Graduate Student(REGS) program instituted by GEAR at George Mason University under the guidance of Dr. Chris Manon and Dr. Sean Lawton to work on *Experiments with Characteristic Varieties*.
- August 2010 - May 2015: Recipient of INSPIRE -SHE Fellowship (Roll No: 259S/2010) instituted by Department of Science and Technology, Government of India.
- June 2012 - August 2012: Summer Fellowship by INSPIRE to conduct research at National Centre for Biological Sciences

---

## Invited Talks

---

- Spring 2020: Topology Seminar, George Washington University. The Character Varieties of torus knots.
- Spring 2018: Student Research Talks, George Mason University. An Introduction to Character Varieties.
- Spring 2018: Topology Seminar, George Washington University. On  $SL(2, \mathbb{C})$  Character Varieties.

- Fall 2016: Student Research Talks, George Mason University. Decomposition of Complex Hyperbolic Isometries by Involution.
- Summer 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017, Spring 2018, Fall 2018 - Poster presentations and talks as part of the MEGL Research Team(jointly with undergraduates) in MEGL Symposium.

---

### Funded Workshops and Conferences

---

- March 2019: Workshop on the Geometry and Physics of Higgs bundles IV, Simons Center for Geometry and Physics (SCGP)
- May 2019: Current trends on spectral data for Higgs bundles V, Simons Center for Geometry and Physics (SCGP)
- June 2018: RTG Workshop on the Geometry and Physics of Higgs bundles III , University of Illinois at Chicago (UIC)
- November 2017: RTG Workshop on the Geometry and Physics of Higgs bundles II, University of Illinois at Chicago
- January 2017: Joint Mathematical Meetings, Atlanta
- October 2016: Workshop on the Geometry and Physics of Higgs bundles I, University of Illinois at Chicago
- June 2016: Character Varieties: Experiments and New Frontiers as part of the AMS: Mathematics Research Committees - 2016, Snowbird, Utah
- October 2015: Topology and Groups, Goa University, India
- August 2015: Secured funding for poster presentation at Advanced School and Workshop on Geometry of Discrete Actions, International Centre for Theoretical Physics, Trieste, Italy (Didn't attend)
- December 2014: ATM Workshop on Lattices: Geometry and Dynamics, IISER Mohali, India
- December 2014 International Workshop of Geometry and Analysis on Hyperbolic Geometry, Delhi University, India

---

### Professional Services and Outreach

---

- Teaching - NSF - Improving Undergraduate STEM Education(IUSE) project at GMU
  - Graduate Research Assistant : June 2019 - May 2020 . Duties include:
    - \* Developing Inquiry Based Learning(IBL) worksheets to promote group work and discussion among students for Calculus 1 and Calculus 2.
    - \* Co-organizing biweekly Teaching Seminar to discuss the challenges and progress of the implementation of IBL worksheets in recitations.
    - \* Coordinating other teaching assistants involved in IUSE project.
- Talked about 'Character varieties and torus knots' as a one day substitute instructor for the graduate course 'Geometric Group Theory' in Spring 2020.
- Association for Women In Mathematics (GMU Chapter)
  - President : March 2018 - March 2020 ;
  - Treasurer: 2017 - 2018. Duties include securing grants/funds from GMU for events sponsored by AWM.
  - Vice President : 2016 - 2017. Duties include helping organize the events sponsored by AWM.
- Mason Experimental Geometry Lab (MEGL)
  - Graduate Lab Manager : Spring 2019, Fall 2019, Spring 2020

- Volunteer for MEGL Outreach at Elementary, Middle and High Schools including the Nifty Fifty Event Feb 2019.
  - Graduate student mentor for research team of undergraduates in Summer 2015, Spring 2016, Fall 2016, Summer 2016, Spring 2017, Fall 2017 and Spring 2018.
  - Graduate Student Intern : Summer 2015 and Spring 2016 - Fall 2018.
  - StReeTs (Student Research Talks) Seminar Series at GMU
    - Organizer - Fall 2018
    - Co-organizer - Spring 2019, Fall 2019, Spring 2020
  - Conference Organization
    - Volunteer for East Coast Optimization Meeting (ECOM) 2019 and ECOM 2020. Duties included securing partial funding from GMU and helping out with organization.
    - Helped organize one day workshop on Professional Development Event at GMU in March 2017 in the capacity as the Vice President of AWM.
    - Assistant to Organizers for Mathematics Research Communities(MRC) conference on *Character Varieties: Experiments and New Frontiers* by AMS in June 2011.
  - Mathematics Outreach
    - Helped coordinate outreach events for high school girls from Centreville Highschool in Spring 2017 and Spring 2018 (as Vice president and Treasurer of AWM).
    - Volunteer for multiple outreach activities organized my MEGL at elementary, middle, high schools and library. Also helped out with a Nifty-Fifty event at the Department of Homeland Security for S&T/CWMD Kids day.
    - Volunteer in the SIAM booth at USA Science and Engineering Festival (2016 and 2018).
    - Volunteer as Crowd counter for National Math Festival (2017).
    - Grader for MATHCOUNTS - Feb 2017, Feb 2018 and Feb 2019.
  - Reviewer for Spring 2020 Mason Core Assessment: Natural Sciences
  - Reader for Office of Disability Services
- Duties include recording chapters of books for Homological Algebra, Equivariant K-Theory, Category Theory and Introduction to Algebraic Geometry.
- Helped in coordinating Departmental Tea/Coffee Time organized by Department of Mathematics in Fall 2019.

---

## References

---

- |  |  |
|--|--|
| 1. Dr. Sean Lawton<br>(slawton3@gmu.edu)<br>Associate Professor,<br>George Mason University. | 2. Dr. Krishnendu Gongopadhyay<br>(krishnendug@gmail.com)<br>Assistant Professor,<br>IISER Mohali, India |
|--|--|

Last updated: April 2, 2020.