

# Nida Obatake

MATHEMATICS PHD CANDIDATE · TEXAS A&M UNIVERSITY

✉ nidakoba@gmail.com | 🌐 www.math.tamu.edu/~nida | 📧 needez | 🌐 nidakazi

## Education

### Postdoctoral Fellow

INSTITUTE FOR DEFENSE ANALYSES – SUPERVISOR: RYAN (SKIP) GARIBALDI

La Jolla, California

2021 - 2022 (expected)

### Doctor of Philosophy, Mathematics

TEXAS A&M UNIVERSITY – ADVISOR: ANNE SHIU

College Station, Texas

2016 - 2021

### Master of Science, Mathematics

SAN JOSÉ STATE UNIVERSITY – ADVISOR: ELIZABETH GROSS

San Jose, California

2013 - 2016

### Bachelor of Science, Mathematics

SANTA CLARA UNIVERSITY – ADVISOR: FRANK FARRIS

Santa Clara, California

2009 - 2013

## Publications

*In Mathematics, authors are listed alphabetically.*

8. *Dynamics of ERK regulation in the processive limit*, Carsten Conradi, Nida Obatake, Anne Shiu, and Xiaoxian Tang. J. Math. Biol. To appear, 2020. Available from [arXiv:1910.14452](#).
7. *Mixed volume for small reaction networks*, Nida Obatake, Anne Shiu and Dilruba Sofia. Involve. To appear, 2020. Available from [arXiv:2004.14467](#).
6. *Modeling RNA:DNA Hybrids with Formal Grammars*, Nataša Jonoska, Nida Obatake, Svetlana Poznanovikj, Candice Price, Manda Riehl, and Mariel Vazquez. In: Using Mathematics to Understand Biological Complexity: From Cells to Populations. Ed. by Rebecca Segal, Blerta Shtylla, and Suzanne Sindi. Vol. 22. Springer International Publishing. To appear, 2020.
5. *Identifiability of Linear Compartmental Models: The Effect by Moving Inputs, Outputs, and Leaks*, Seth Gerberding, Anne Shiu, and Nida Obatake. Linear and Multilinear Algebra, pp 1-22 (2020). Available from [Taylor & Francis Online](#).
4. *Oscillations and bistability in a model of ERK regulation*, Nida Obatake, Anne Shiu, Xiaoxian Tang, and Angélica Torres. J. Math. Biol., 79:4, pp 1515–1549 (2019). Available from [SpringerLink](#).
3. *Neural ideals and stimulus space visualization*, Elizabeth Gross, Nida Obatake, and Nora Youngs. Adv. in Appl. Math, 95, pp 65–95 (2018). Available from [ScienceDirect](#).
2. *Drawing place field diagrams of neural codes using toric ideals*, Nida Obatake. San José State University, ProQuest Dissertations Publishing (2016). Available from [ScholarWorks](#).

## Preprints

1. *On the identification of  $k$ -inductively pierced codes using toric ideals*, Molly Hoch, Samuel Muthiah, and Nida Obatake. Submitted to *Journal of Algebra and its Applications* (in revision). Available from [arXiv:1807.02390](#), 2019.

## Grants

Jul 2019	<b>NSF DMS-1937317</b> , in support of the Texas Women in Math Symposium 2020 PI: Laura Matusevich; co-PIs: Priyanga Ganesan, Nida Obatake, Aleksandra Sobieska, and Elise Walker	\$8000
Apr 2019	<b>College of Science Diversity &amp; Equity Grant</b> , Texas Women in Math Symposium 2020 with Laura Matusevich, Priyanga Ganesan, Aleksandra Sobieska, and Elise Walker	\$2000
Mar 2019	<b>MAA Tensor Women in Mathematics Grant</b> , Texas Women in Math Symposium 2020 with Laura Matusevich, Priyanga Ganesan, Aleksandra Sobieska, and Elise Walker	\$6000
Apr 2018	<b>College of Science Diversity &amp; Equity Grant</b> , Peer Mentoring Program for Mathematics Graduate Students with Laura Matusevich, Changningphaabi Namoiyam, Aleksandra Sobieska, and Elise Walker	\$1960

## Honors & Awards

Jan 2021	<b>NSF Mathematical Sciences Postdoctoral Research Fellowship</b> ( <i>declined</i> ), PI: Nida Obatake	NSF
Oct 2020	<b>L.F. Guseman Prize</b> , Department of Mathematics	TAMU
Jun 2020	<b>2020 Leadership in Equity and Diversity (LEAD) Award</b> , College of Science	TAMU
May 2020	<b>Awardee</b> , 2020 American Dissertation Fellowship	AAUW
Apr 2020	<b>P.E.O. Scholar Award</b> ( <i>declined</i> ), International Chapter of the P.E.O. Sisterhood	P.E.O.
Apr 2020	<b>Aggie Leader Scholarship</b> , Sam W and Mary Richards Martin Endowed Scholarship Fund	TAMU
Jan 2020	<b>Honorable Mention</b> , Ford Foundation 2020 Dissertation Fellowship Competition	NASEM
Jan 2020	<b>Ethel Ashworth-Tsutsui Memorial Award for Research</b> , Women In Science and Engineering at Texas A&M	TAMU
Sep 2019	<b>Undergraduate Research Mentoring Award</b> , College of Science	TAMU
Jul 2019	<b>Best poster presentation</b> , SIAM Conference on Applied Algebraic Geometry	Bern, Switzerland

May 2019	<b>Herman F Heep Scholarship &amp; Achievement</b> , Academic Excellence Award	TAMU
May 2019	<b>Outstanding TA Award</b> , Houston A&M Mother's Club	TAMU
Apr 2019	<b>Aggie Leader Scholarship</b> , Sean M. Golden '01 and Heather Sustman Golden '99 Scholarship Fund	TAMU
May 2018	<b>Certificate of recognition for outstanding service and contributions</b> , SIAM Student Chapter Award	SIAM
2016–2018	<b>H.B. Curtis Fellow in Mathematics</b> , Graduate Fellowship	TAMU
May 2016	<b>Franklyn B. Fuller award for exceptional math graduate student</b> , Mathematics Department Scholarship	SJSU
Apr 2015	<b>Kenneth C. Bradshaw award for outstanding teaching associate</b> , Mathematics Department Scholarship	SJSU
Aug 2014	<b>Viola Palmer Memorial Scholarship</b> , Graduate Merit Scholarship	SJSU

## Mentoring

### Mathematics REU

Texas A&M University

GRADUATE STUDENT RESEARCH MENTOR FOR 2 UNDERGRADUATE STUDENTS

Summer 2019

- Supervised research projects on mixed volume of chemical reaction networks and identifiability in linear compartment models. Held research meetings 1–2 times per week. Resulted in 2 papers co-authored with undergraduates.
- Led presentations for the entire REU cohort (12 undergraduate students) on “How (not) to give a talk” and “Using TikZ in beamer presentations”.
- Critiqued students’ abstracts, manuscripts, beamers, and oral presentations. Provided feedback on content, clarity, and accessibility.
- Met weekly with 4 female undergraduate students to discuss graduate school: applications, exams and coursework, research, and student life.

### Directing Reading Program

Texas A&M University

GRADUATE STUDENT MENTOR FOR 1 UNDERGRADUATE STUDENT

Spring 2019

- Led a reading course on applied algebraic topology and neural codes. Met weekly to discuss reading material. Advised on graduate school applications.
- Helped student prepare her first beamer slides and oral presentation.

### Mathematics REU

Texas A&M University

GRADUATE STUDENT RESEARCH MENTOR FOR 5 UNDERGRADUATE STUDENTS

Summer 2017

- Supervised research projects on toric ideals of neural codes and identifiability in linear compartment models. Held weekly research meetings and advised on research directions. Resulted in 1 paper co-authored with undergraduates.
- Led presentation for the entire REU cohort (13 undergraduate students) on “How (not) to give a talk” and organized a Graduate School panel.
- Critiqued students’ abstracts, manuscripts, beamers, and oral presentations. Provided feedback on content, clarity, and accessibility.

## Teaching Experience

### Mathematics Department

Texas A&M University

GRADUATE TEACHING ASSISTANT

Aug 2016 - May 2020

- Week-in-Review Instructor**  
Led weekly review sessions open to all 1100 students of Math for Business and the Social Sciences (Math 140).  
Created worksheets to illustrate the concepts with meaningful examples and detailed problem solutions. Spring 2020
- Instructor of record**  
Mathematics for Business and the Social Sciences (Math 140) – 65 students per semester Fall 2018, Fall 2019
- Recitation and Python lab instructor  
Engineering Calculus 1 (Math 151) Spring 2019
- Recitation instructor  
Calculus 1 for Biological Sciences (Math 147) Fall 2017, Spring 2018  
Engineering Calculus 2 (Math 152) Fall 2016
- Grader  
Applied Algebra (Math 433) Spring 2017
- Help session instructor  
Linear Algebra Fall 2016

### Mathematics Department

San José State University

TEACHING ASSOCIATE

Aug 2014 - May 2016

- Instructor of record**  
College Algebra (Math 8) – 30-40 students per section Fall 2014 (1 section), Spring 2015 (1 section), Fall 2015 (2 sections), Spring 2016 (1 section)
- Workshop Facilitator  
Led workshop for Developmental Math (Math 6B) Spring 2016  
Led workshop for Multivariable Calculus (Math 32) Fall 2014, Spring 2015

### Kumon Math and Reading Center

Multiple locations

ASSISTANT INSTRUCTOR

2008-2014

- Activities included grading, recording, and assisting K-12 students with math and reading worksheets.

### Mathematics Department

Santa Clara University

GRADER

2011-2013

- Graded assignments for Vector Calculus (Calc 3), Discrete Math, and Business Calculus.

## Conference Events Organized

2021	<b>Minisymposium on “Algebraic-geometric methods for reaction networks”</b> , SIAM AG 21, virtual	Aug 16–21, 2021
2020	<b>Minisymposium on “Algebraic, geometric, and combinatorial methods in mathematical biology”</b> , SIAM TX-LA 3rd Annual Meeting, Texas A&M University	Oct 16–18, 2020
2020	<b>Texas Women in Mathematics Symposium (TWIMS)</b> , 112 registered participants, Texas A&M University	Feb 1–2, 2020
2019	<b>Minisymposium on “Algebraic, geometric, and combinatorial methods in mathematical biology”</b> , SIAM TX-LA 2nd Annual Meeting, Southern Methodist University	Nov 1–3, 2019
2017–2019	<b>Industrial and Applied Mathematics Seminar</b> , Texas A&M University	bi-weekly
2018; 2019	<b>TAMU-AMS Gathering in Graduate Expository Mathematics (GIGEM)</b> , Texas A&M University	Mar 4, 2018; Feb 16, 2019

## Talks

\* = *invited talk*

<b>Society for Mathematical Biology 2021 Annual Meeting; Zoom</b> , <i>Mixed volume of chemical reaction networks*</i>	Jun 17, 2020
<b>Seminar on the Mathematics of Reaction Networks; Zoom</b> , <i>Mixed volume of reaction networks*</i>	Dec 10, 2020
<b>Geometry Seminar; Texas A&amp;M University</b> , <i>Polyhedral methods for chemical reaction networks</i>	Nov 4, 2019
<b>SIAM TX-LA Annual Meeting; Southern Methodist University</b> , <i>Dynamics in a model of ERK regulation*</i>	Nov 3, 2019
<b>SIAM AG 2019; University of Bern</b> , <i>Sufficient conditions for 1- and 2- Inductively Pierced Codes*</i>	Jul 10, 2019
<b>Trieste Algebraic Geometry Summer School; ICTP</b> , <i>Polyhedral Methods for Chemical Reaction Networks</i>	Jul 1, 2019
<b>AWM Research Symposium; Rice University</b> , <i>Toric Ideals of Neural Codes*</i>	Apr 7, 2019
<b>AWM Research Symposium; Rice University</b> , <i>Hopf bifurcations in the ERK Network*</i>	Apr 6, 2019
<b>AMS Spring Southeastern Sectional Meeting; Auburn University</b> , <i>Oscillations in the ERK Network*</i>	Mar 16, 2019
<b>Graduate Student Seminar; Texas A&amp;M University</b> , <i>Oscillations in the ERK Network</i>	Mar 7, 2019
<b>TAMU-AMS GIGEM 2019; Texas A&amp;M University</b> , <i>Amoebas!*</i>	Feb 16, 2019
<b>Graduate Student Seminar; Texas A&amp;M University</b> , <i>Chemical Reaction Networks</i>	Sep 13, 2018
<b>ICMS 2018; Notre Dame University</b> , <i>The capacity for Hopf bifurcations in the fully distributive dual-site phosphorylation network</i>	Jul 24, 2018
<b>Joint Mathematics Meeting (JMM)</b> , <i>Place field diagrams of neural codes</i>	Jan 12, 2018
<b>AMS Fall Central Sectional Meeting</b> , <i>Place field diagrams of convex neural codes*</i>	Sep 9, 2017
<b>SIAM Conference on Applied Algebraic Geometry</b> , <i>Toric Ideals of Neural Codes*</i>	Aug 1, 2017
<b>Graduate Student Seminar; Texas A&amp;M University</b> , <i>Rat GPS</i>	Nov 10, 2016
<b>Texas Women in Math Symposium</b> , <i>Drawing place field diagrams of neural codes using toric ideals</i>	Nov 5, 2016
<b>Student Working Seminar in Algebraic Geometry; Texas A&amp;M University</b> , <i>Differential Forms and Manifolds, Integration, Stoke’s Theorem</i>	Nov 1, 2016
<b>Geometry Seminar; Texas A&amp;M University</b> , <i>Drawing place field diagrams of neural codes using toric ideals*</i>	Sep 26, 2016
<b>Master’s thesis defense; San Jose State University</b> , <i>Drawing place field diagrams of neural codes</i>	May 17, 2016
<b>Colloquium; San Jose State University</b> , <i>Algebraic methods for realizing neural codes*</i>	May 4, 2016
<b>Colloquium; Santa Clara University</b> , <i>Algebraic methods for realizing neural codes*</i>	Apr 26, 2016
<b>AMS Fall Western Sectional Meeting</b> , <i>Toric ideals of neural codes</i>	Oct 25, 2015

## Posters

<b>SCMB Annual Symposium; Georgia Tech</b> , <i>Hopf bifurcations in a model of ERK regulation</i>	Feb 17, 2020
<b>SIAM Conference on Applied Algebraic Geometry; University of Bern</b> , <i>A constructive algorithm for a positive solution to a system of polynomial inequalities</i>	Jul 9, 2019
<b>Southwest Local Algebra Meeting; University of Texas at El Paso</b> , <i>Hopf bifurcations in chemical reaction networks</i>	Feb 23, 2019
<b>TWIMS; University of Houston</b> , <i>Hopf bifurcations in the fully distributive dual-site phosphorylation network</i>	Nov 17, 2018
<b>CBMS, Applications of Polynomial Systems; Texas Christian University</b> , <i>The capacity for Hopf bifurcations in the fully distributive dual-site phosphorylation network</i>	Jun 4, 2018
<b>College of Science Student Research Day; San Jose State University</b> , <i>Drawing Place Field Diagrams of Neural Codes using Toric Ideals</i>	May 6, 2016
<b>MAA Golden Section Meeting; UC Davis</b> , <i>Toric ideals of neural codes</i>	Feb 27, 2016
<b>Biology and Math in the Bay Area (BaMBA); San Jose State University</b> , <i>Toric ideals of neural codes</i>	Oct 17, 2015

## Review Activities

---

Refereed articles for Bulletin of Mathematical Biology, FPSAC'19, CASC 2019, SIAM Journal on Applied Dynamical Systems, and Advances in Applied Mathematics

## Outreach

---

2018–2019	<b>Co-organizer</b> , Peer Mentoring Program group meeting, monthly	<i>Texas A&amp;M University</i>
2017–2019	<b>Co-organizer</b> , <u>Women in Math Mentoring Lunch</u> , monthly	<i>Texas A&amp;M University</i>
Oct 2018	<b>Volunteer</b> , <u>Boonville Days</u> : community activity on geometry and symmetry	<i>Brazos Valley Museum of Natural History</i>
Apr 2018	<b>Panelist</b> , Department Review: Discussion on the Mathematics Graduate Program	<i>Texas A&amp;M University</i>
Feb 2018	<b>Panelist</b> , Graduate school in mathematics informational session	<i>St. Edwards University</i>
Feb 2018	<b>Contributed Talk Session Moderator</b> , CombinaTexas	<i>Texas A&amp;M University</i>
2016–2018	<b>Volunteer</b> , <u>Math Circle</u> : education enrichment for gifted students in grades 5–12	<i>Texas A&amp;M University</i>
Feb 2018	<b>Volunteer: math art room</b> , <u>Math &amp; Stats Fair</u> : Julia Robinson Math Festival for K-12	<i>Texas A&amp;M University</i>
Feb 2018	<b>Organizer: math art room</b> , <u>STEMfest</u> : engaging girls K-12 in STEM	<i>Texas A&amp;M University</i>
Mar 2017	<b>Volunteer</b> , <u>Math &amp; Stats Fair</u> : Julia Robinson Math Festival for K-12	<i>Texas A&amp;M University</i>
Feb 2017	<b>Co-organizer: math art room</b> , <u>STEMfest</u> : engaging girls K-12 in STEM	<i>Texas A&amp;M University</i>
2013	<b>Teen Workshop Leader</b> , Santa Maria Urban Ministry	<i>San Jose, CA</i>

## Leadership

---

### Mathematics Department

*Texas A&M University*

#### STUDENT CHAPTER OFFICER

*Fall 2016 - Spring 2019*

• American Mathematical Society (AMS) TAMU Graduate Student Chapter	
President	<i>2018–2019</i>
Secretary	<i>2017–2018</i>
• Association for Women in Mathematics (AWM) TAMU Graduate Student Chapter	
Vice President	<i>2017–2019</i>
Secretary/Webmaster	<i>2016–2017</i>
• Society for Industrial and Applied Math (SIAM) TAMU Graduate Student Chapter	
Vice President	<i>2018–2019</i>
Liaison Officer	<i>2017–2018</i>

## Memberships

---

- Association for Women in Mathematics (AWM)
- American Mathematical Society (AMS)
- Society for Industrial and Applied Mathematics (SIAM)
- The EDGE Program - Enhancing Diversity in Graduate Education (2016 cohort)
- Mathematical Association of America (MAA)
- Pi Mu Epsilon (PiME) Math Honor Society

## Travel Awards

---

Jun 2020	<b>Conference Travel Grant</b> , for SIAM TX-LS	<i>declined</i>
Nov 2019	<b>Conference Travel Grant</b> , for SIAM TX-LA	
Jun 2019	<b>Graduate Student Research and Presentation Travel Award</b> , Texas A&M University Office of Graduate and Professional Studies for SIAM AG 2019	
Jun 2019	<b>SIAM Grant</b> , for Collaborative Workshop for Women in Math Bio	
Mar 2019	<b>SIAM Student Travel Grant</b> , for SIAM AG 2019	
Apr 2019	<b>AWM Student Travel Grant</b> , for AWM Research Symposium 2019	<i>declined</i>
Feb 2019	<b>Conference Travel Grant</b> , for SLAM 2019	
Nov 2018	<b>Conference Travel Grant</b> , for TWIMS 2018	
Jul 2018	<b>Conference Travel Grant</b> , for ICMS 2018	
Jun 2018	<b>Conference Travel Grant</b> , for CBMS conference on Applications for Polynomial Systems	
Jan 2018	<b>EDGE Travel Grant</b> , for JMM 2018 EDGE for Women session	
Sep 2017	<b>AMS Student Travel Grant</b> , for AMS Denton	
Jun 2016	<b>EDGE grant</b> , for EDGE 2016 workshop	
Oct 2015	<b>Conference Travel Grant</b> , for AMS Fall Western Sectional Meeting	

## Conferences & Workshops Attended

---

Society for Mathematical Biology 2021 Annual Meeting, University of Riverside (virtual)	Jun 2021
Data Science Bootcamp, Erdős Institute (virtual)	May 2021
Summer School on Sums of Squares Method in Geometry, Combinatorics and Optimization, MSRI	postponed
Southeast Center for Mathematics and Biology Annual Symposium, Georgia Tech	Feb 2020
Texas Women in Math Symposium, Texas A&M University	Feb 2020
SIAM TX-LA Annual Sectional Meeting, Southern Methodist University	Nov 2019
Graduate Algebra Symposium, Texas A&M University	Oct 2019
Mini Texas Algebraic Geometry Symposium, Texas A&M University	Oct 2019
SIAM Conference on Applied Algebraic Geometry, University of Bern	Jul 2019
Trieste Applied Algebraic Geometry Summer School, ICTP, Trieste, Italy	Jul 2019
Collaborative Workshop for Women in Mathematical Biology, IPAM, UCLA	Jun 2019
AWM Research Symposium, Rice University	Apr 2019
CombinaTexas 2019, Texas A&M University	Mar 2019
AMS Spring Southeastern Sectional Meeting, Auburn University	Mar 2019
Southwest Local Algebra Meeting, University of Texas at El Paso	Feb 2019
TAMU-AMS GIG'EM 2019, Texas A&M University	Feb 2019
Texas Algebraic Geometry Symposium, University of Texas at Austin	Feb 2019
Texas Women in Math Symposium, University of Houston	Nov 2018
2nd Madison Workshop on Mathematics of Reaction Networks, University of Wisconsin–Madison	Aug 2018
SIAM Conference on the Life Sciences 2018, Minneapolis, MN	Aug 2018
ICMS 2018, Notre Dame University	Jul 2018
CBMS Regional Conference on Applications of Polynomial Systems, Texas Christian University	Jun 2018
Texas Algebraic Geometry Symposium, Texas A&M University	Apr 2018
TAMU-AMS Gathering in Graduate Expository Mathematics (GIG 'EM) Conference, Texas A&M University	Mar 2018
Texas Geometry and Topology Conference, University of Houston	Feb 2018
CombinaTexas, Texas A&M University	Feb 2018
Joint Mathematics Meeting (JMM), San Diego, CA	Jan 2018
Texas Women in Math Symposium (TWIMS), Sam Houston State University	Dec 2017
AMS Fall Central Sectional Meeting, University of North Texas	Sep 2017
SIAM Conference on Applied Algebraic Geometry, Georgia Institute of Technology	Jul–Aug 2017
Texas Algebraic Geometry Symposium (TAGS), Rice University	Apr 2017
Texas Women in Math Symposium (TWIMS), UT Austin	Nov 2016
Texas Topology & Geometry Conference (TGTC), Texas A&M University	Nov 2016
MAA Golden Sectional Meeting, UC Davis	Feb 2016
AMS Fall Western Sectional Meeting, CSU Fullerton	Oct 2015
Biology and Mathematics in the Bay Area (BaMBA), San Jose State University	Oct 2015
Bay Area Discrete Math Day (BAD Math), San Francisco State University	Oct 2015
Bay Area Discrete Math Day (BAD Math), Monterey, CA	May 2015
Biology and Mathematics in the Bay Area (BaMBA), UC Davis	Nov 2014