

# NÉSTOR FERNANDO DÍAZ MORERA

Tulane University  
Department of Mathematics  
Gibson Hall 313A

[ndiazmorera@tulane.edu](mailto:ndiazmorera@tulane.edu)  
Néstor F. Díaz Morera

## ACADEMIC INTERESTS

---

Representation Theory: Algebraic Groups and Combinatorics.

## EDUCATION

---

### Tulane University, New Orleans, USA

- Ph.D., in Mathematics (expected graduation: May 2024).
- Dissertation Topic: Torus actions, spherical varieties, Dyck paths, and shellability.
- Advisor: [Prof. Mahir Bilen Can](#)  
- [mcan@tulane.edu](mailto:mcan@tulane.edu)

### Instituto Politécnico Nacional, Ciudad de México, México

- M.S., in Mathematics (2018).
- Dissertation Topic:  $Q_p$  spaces on hyperbolic Riemann surfaces
- Advisor: Prof. Luis M. Tovar Sánchez  
- [tovar@esfm.ipn.edu](mailto:tovar@esfm.ipn.edu)

### Universidad Sergio Arboleda, Bogotá, Colombia

- B.S., in mathematics (2015).
- Dissertation Topic: Complex structures on compact surfaces
- Advisor: Prof. Leonardo A. Cano García  
- [lcanog@unal.edu.co](mailto:lcanog@unal.edu.co)

## PUBLICATIONS AND PREPRINTS

---

2. [Lexicographic shellability of sects](#) (joint with [Aram Bingham](#)). Submitted. 2024
1. [Nearly toric Schubert varieties of Type A](#) (joint with Mahir Can). Submitted. 2023

## CONFERENCES AND CONTRIBUTED TALKS

---

8. *Shellability of symmetric spaces and Bruhat orders*. SIAM Texas-Louisiana Sectional Meeting ([SIAM TX-LA](#)), University of Louisiana at Lafayette, LA, USA, Nov 3-5, 2023.
7. *Enumerating spherical Dyck paths and smooth nearly toric varieties*. Discrete Mathematics and Computer Sciences ([DiscreteMath](#)), Univesidad Nacional, Bogotá D.C, Colombia, Oct 9, 2023 (virtual).

---

<sup>1</sup>Updated February 6, 2024

6. *Nearly toric Schubert varieties and Dyck paths*. 13<sup>th</sup> SE Lie Theory Workshop-NC State university ([Combinatorial Representation Theory of Algebras and Applications](#)), Raleigh, NC, USA, May 12-14, 2023.
5. *Dyck paths and nearly toric Schubert varieties*. CombinaTexas-TAMU ([CombinaTexas](#)), College Station, TX, USA, April 22-23, 2023.
4. *Spherical partition Schubert varieties and Dyck paths*. Southern Regional Algebra Conference ([SRAC](#)), New Orleans, USA, March 24-26, 2023.
3. *Dyck paths and nearly toric Schubert varieties*. Joint Mathematics Meetings ([JMM](#)), Boston, USA, January 4-7, 2023.
2. *Ding and Schubert Varieties*. Congreso Nacional Sociedad Matemática Mexicana, Gaudalajara-México, Octubre, 2022 (hybrid-[video](#)).
1.  *$Q_p$  Spaces on Hyperbolic Riemann Surfaces*. Encuentro Sociedades de Matemáticas de Colombia y México, Barranquilla, Colombia, June 1, 2018.

## Posters

5. *Lexicographic shellability of sects*. [Sagan2024](#), University of Florida, USA, February-2024.
4. *Lexicographic shellability of sects*. [CAAC](#), LACIM (UQAM), Montréal, Canada, January-2024.
3. *Spherical Dyck paths*. [Permutation Pattern 2023](#), University of Burgundy, Dijon, France, July-2023.
2. *Nearly toric Schubert varieties and Dyck paths*. [SLAM](#), University of North Texas, USA, March-2023.
1. *Spherical partition Schubert varieties*. [PRIMA CONGRESS 2022](#), Vancouver, Canada, December-2022.

## Participant

9. *Canada–Mexico–US Conference in Representation Theory, Noncommutative Algebra, and Categorification*. [CRM](#), Montréal, Canada, August-2023.
8. *Algebraic Geometry in Spectral Theory*. [ICERM](#), Providence, RI, USA, March-2023.
7. *Texas Algebraic Geometry Symposium (TAGS)*. Texas A&M University, College Station, Texas, USA, September-2022.
6. *Southern Regional Algebra Conference (SRAC)*. Georgia College & State University, Milledgeville, Georgia, USA, March-2022.
5. *CombinaTexas*. Texas A&M University, College Station, Texas, USA, March-2022.
4. *PRIMA congress*. Casa Matemática Oaxaca, Oaxaca, México, August-2017.
3. *Seminario Interinstitucional “Análisis: Norte-Sur”*. CINVESTAV-IPN, CDMX-México, November-2016.
2. *Congreso Nacional de la Sociedad Matemática Mexicana*. La Sociedad Matemática Mexicana, Aguascalientes, México, October-2016.
1. *XIX Congreso Colombiano de Matemáticas*. La Sociedad Matemática Colombiana, Barranquilla, Colombia, July-2013.

## SEMINAR PRESENTATIONS (EXPOSITORY)

---

5. *Ding and Schubert Varieties*. Graduate Student Colloquium at Tulane university, USA, Spring 2022.
4. *A naive Introduction to Affine Schemes*. Graduate Student Colloquium at Tulane university, USA, Fall 2021.
3. *From Differential Geometry to Lie Theory*. Graduate Student Colloquium at Tulane university, USA, Fall 2020 (virtual).
2. *Contar nos hace la vida más fácil*. COCITEI, Oaxaca-México, Summer 2020 (virtual-[video](#)).
1. *Manifolds and their Applications*. Graduate student Seminar at IPN, México, Fall 2018.

## TEACHING EXPERIENCE

---

### Tulane University

- Instructor, Math 1230 Statistics for Scientist (Spring 2024)
- Instructor, Math 1230 Statistics for Scientist (Fall 2023)
- Instructor, Math 1100 Probability & Statistic I (Summer 2023)
- Teaching Assistant, Math 1221 Calculus II (Spring 2023)
- Teaching Assistant, Math 1311 Consolidated Calculus I (Fall 2022)
- Instructor, Math 1100 Probability & Statistic I (Summer 2022)
- Instructor, Math 1150 Long Calculus I (Spring 2022).
- Teaching Assistant, Math 3090 Linear Algebra (Fall 2021).
- Teaching Assistant, Math 1230 Statistics for Scientist (Fall 2019, Spring 2020, Fall 2020, Spring 2021).
- Teaching Assistant, Math 1210 Calculus I (Fall 2018).

## OUTREACH & SERVICE

---

### Administration

- Volunteer in [Math For All](#), a conference on Math Education and Research, NOLA (2021 & 2022).
- President of [AMS Student Chapter](#) (2021-2022).

### Undergrad research trainees

- Alexander Caione, *introduction to algebraic actions*, 2020-2021.

## AWARDS

---

- Travel Grant for [Schubert Summer School @ UIUC](#), Champaign, IL, USA (June 2023).
- AMS Travel Grant for Joint Mathematics Meetings (JMM), Boston, MA (January 2023).
- Travel Grant for Mathematical Sciences Research Institute (MSRI): Gauge Theory in Geometry and Topology (Virtual School) (June-July 2021).
- Summer Research Support from the department of Mathematics, Tulane university (2019-2021).
- The National Council for Science and Technology (CONACYT) scholarship: Master's studies at IPN-México (2016-2018).

## SKILLS

---

- **Languages:** Spanish (native), English.
- **Programming:** Familiar with Python and Sage.
- **Formatting:** L<sup>A</sup>T<sub>E</sub>X and Microsoft Office.
- **Hobbies:** Running, football, cycling, and cooking.

## REFERENCES

---

1. PROFESSOR MAHIR BILEN CAN, [mcan@tulane.edu](mailto:mcan@tulane.edu).
2. ASSOCIATE PROFESSOR RAFAL KOMENDARCZYK, [rako@tulane.edu](mailto:rako@tulane.edu).
3. ASSISTANT PROFESSOR DANIEL IRVING BERNSTEIN, [dbernstein1@tulane.edu](mailto:dbernstein1@tulane.edu).
4. PROFESSOR OF PRACTICE MICHAEL JOYCE (teaching), [mjoyce3@tulane.edu](mailto:mjoyce3@tulane.edu).
5. TEACHING POSTDOCTORAL FELLOW ARAM BINGHAM, [arambingham@mines.edu](mailto:arambingham@mines.edu).