Néstor Fernando Díaz Morera

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Research Interests

Representation Theory: Algebraic Groups and Combinatorics.

Appointments

2024 - present	**Fitchburg State University,** Visiting Assistant Professor.

Education

2018 – 2024   **Ph.D. Mathematics, Tulane University, USA**.
Thesis title: *Torus actions, spherical varieties, Dyck paths, and shellability*.
Advisor: Mahir Bilen Can.

2016 – 2018   **M.S. Mathematics, Instituto Politécnico Nacional, México**.
Thesis title: Q_p spaces on hyperbolic Riemann surfaces.
Advisor: Luis M. Tovar Sánchez.

2010 – 2015   **B.S. Mathematics, Universidad Sergio Arboleda, Colombia**.
Thesis title: *Complex structures on compact surfaces*.
Adviser: Leonardo A. Cano García.

Publications and Preprints

Preprints

1. A. Bingham and N. D. Morera, *Lexicographic shellability of sects*, 2023. arXiv: 2312.15093 [math.CO].
🔗 URL: https://arxiv.org/abs/2312.15093.

2. M. B. Can and N. D. Morera, *Nearly toric schubert varieties and dyck paths*, 2023. arXiv: 2212.01234 [math.AG]. 🔗 URL: https://arxiv.org/abs/2212.01234.

Teaching Experience

Fitchburg State University

2024 - present   **Instructor of Record.** Math-1300 Precalculus, Math-1700 Applied Statistics (Fall).

Tulane University

2023 – 2024   **Instructor.** Math-1230, Statistics for Scientist (Fall and Spring).

Summer '23   **Instructor.** Math-1110, Probability & Statistic I.

2022 – 2023   **T.A.** Math-1221 Calculus II (Spring), Math-1311 Consolidated Calculus I (Fall).

Summer '22   **Instructor.** Math-1110, Probability & Statistic I.

Teaching Experience (continued)

2021 – 2022	🔖	**Instructor**. Math 1150 Long Calculus I (Spring). **T.A.** Math-3090 Linear Algebra (Fall).
2019 – 2021	🔖	**T.A.** Math-1230, Statistics for Scientist (Fall and Spring).
2018 – 2019	🔖	**T.A**. Math-1210 Calculus I (Fall), Math-2210 Calculus III (Spring).

Conferences

Invited talks

2023	🔖	*Shellability of symmetric spaces and Bruhat orders*. SIAM Texas-Louisiana Sectional Meeting (SIAM TX-LA), University of Louisiana at Lafayette, LA, USA.
	🔖	*Enumerating spherical Dyck paths and smooth nearly toric varieties*. Discrete Mathematics and Computer Sciences (DiscreteMath), Univesidad Nacional, Colombia (virtual).
	🔖	*Spherical partition Schubert varieties and Dyck paths*. Southern Regional Algebra Conference (SRAC), Tulane University, New Orleans, USA.

Contributed talks

2024	🔖	*Symmetric spaces and shellability*. CIMPA: VIII-Encuentro Colombiano de Combinatoria, Universidad del Cauca, Colombia.
2023	🔖	*Nearly toric Schubert varieties and Dyck paths*. 13th SE Lie Theory Workshop-NC State university (Combinatorial Representation Theory of Algebras and Applications), Raleigh, NC, USA.
	🔖	*Dyck paths and nearly toric Schubert varieties*. CombinaTexas-TAMU (CombinaTexas), College Station, TX, USA.
	🔖	*Dyck paths and nearly toric Schubert varieties*. Joint Mathematics Meetings (JMM), Boston, USA.
2022	🔖	*Ding and Schubert Varieties*. Congreso Nacional Sociedad Matemática Mexicana, Gaudalajara-México, (hybrid-video).
2018	🔖	*Q_p Spaces on Hyperbolic Riemann Surfaces*. Encuentro Sociedades de Matemáticas de Colombia y México, Barranquilla, Colombia.

Posters

2024	🔖	*Lexicographic shellability of sects*. Sagan2024, University of Florida, USA.
	🔖	*Lexicographic shellability of sects*. CAAC, LACIM, Montréal, Canada.
2023	🔖	*Spherical Dyck paths*. Permutation Pattern 2023, University of Burgundy, Dijon, France.
	🔖	*Nearly toric Schubert varieties and Dyck paths*. SLAM, University of North Texas, USA.
2022	🔖	*Spherical partition Schubert varieties*. PRIMA-2022, Vancouver, Canada.

Outreach and Service

Administration

2021-2023	🔖	Volunteer in Math For All, a conference on Math Education and Research, Tulane University, New Orleans, USA.
2021-2022	🔖	President of AMS Student Chapter, Tulane University, LA, USA.

Undergrad research trainees

2020-2021	🔖	Alexander Caione, *introduction to algebraic actions*, Tulane University, New Orleans, USA.

Miscellaneous Experience

Awards

2024   **Department Prize for Best Teaching Performance**, Tulane University.

Travel Grant for ECCO, Universidad del Cauca, Cauca, Colombia.

2023   **Travel Grant** for Schubert Summer School @ UIUC, Champaign, IL, USA.

AMS Travel Grant for Joint Mathematics Meetings (JMM), Boston, MA, USA.

2021   **Travel Grant** for Mathematical Sciences Research Institute (MSRI): Gauge Theory in Geometry and Topology (Virtual School).

Summer Research Support from the department of Mathematics, Tulane university.

2016   **Scholarship** from The National Council for Science and Technology (CONACYT). Master's studies at IPN-México (2016-2018).

Skills

Languages   English, Spanish (native).

Coding   Familiar with Python and Sage.

Hobbies   Running, football, cycling, and cooking.

References

Prof. Mahir Can
Tulane University,
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Prof. Daniel I. Bernstein
Tulane University,
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Prof. Michael Joyce (teaching)
Tulane University,
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