

Contact Information

Aniel Nieves-González

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Education

- Ph.D., Applied Mathematics, State University of New York at Stony Brook, 2010.
- M.S., Applied Mathematics, University of Puerto Rico, Río Piedras, 2006.
- B.S., Computer Science, Physics, and Mathematics (Magna Cum Laude), University of Puerto Rico, Río Piedras, 2003.

Honors

- 2003 Natural Sciences College Award, University of Puerto Rico (UPR).
- 2003 Dr. Francisco Garriga Medal, Department of Mathematics (UPR).
- 2003 Facundo Bueso Medal, Department of Physics (UPR).
- 2002 National Dean's List.
- 2002-2001 Who's Who Among Students in American Universities and Colleges.
- 2002-2001 Dean's List of the Natural Sciences College of the University of Puerto Rico, Río Piedras.
- 1998-2000 University of Puerto Rico, Registrar Honor Enrollment.

Positions: Teaching and Research Experience

- October 2023 - Present. Associate Professor. Institute of Statistics and Computerized Information Systems, University of Puerto Rico, Río Piedras campus. Duties performed in this position:
 - Teaching undergraduate courses in the following areas:
 - * Quantitative Methods for Business Administration I (MECU 3031) and Quantitative Methods for Business Administration II (MECU 3032).

- Teaching graduate level course (MS): Computational Analysis I (MATE 6680).
 - Scholarly work.
- January 2017 - Present. Assistant Professor. Institute of Statistics and Computerized Information Systems, University of Puerto Rico, Río Piedras campus. Duties performed in this position:
 - Teaching undergraduate courses in the following areas:
 - * Quantitative Methods for Business Administration I (MECU 3031) and Quantitative Methods for Business Administration II (MECU 3032).
 - Teaching graduate level course (MS): Computational Analysis I (MATE 6680).
 - Scholarly work.
- August 2012 - December 2016. Adjunct Assistant Professor. Institute of Statistics and Computerized Information Systems, University of Puerto Rico, Río Piedras campus. Duties performed in this position:
 - Teaching undergraduate courses in the following areas:
 - * Mathematics: Quantitative Methods for Business Administration I (MECU 3031) and Quantitative Methods for Business Administration II (MECU 3032).
 - * Statistics: Statistics for Business Administration I (ESTA 3041) and Statistics for Business Administration II (ESTA 3042).
 - * Computer Science: Fundamental Structures of Computer Science (CCOM 3030).
 - Undergraduate course coordination for the course ESTA 3041.
 - Teaching graduate level (MBA) courses:
 - * Algorithms and structures (ADMI 6807).
 - * Decision Making (ADMI 6510).
 - Course creation: Intermediate Quantitative Methods for Finance and Economy I (MECU 5001).
 - Scholarly work.
- January 2011 - July 2012. Visiting Assistant Professor. Department of Mathematics, Duke University. Duties performed in this position:

- Teaching an undergraduate mathematics course: Multivariable calculus (Math 103).
- Scholarly work.
- February 2010 - December 2010. Graduate Assistant of Dr. David Green of the Applied Mathematics & Statistics at State University of New York at Stony Brook.
- August 2006 - January 2010. Research Assistant of Dr. Leon Moore of the Physiology and Biophysics Department at State University of New York at Stony Brook.
- 2004 - Summer 2006. Research Assistant of Dr. Mariano Marcano of the Mathematics Department at University of Puerto Rico, Río Piedras.
- Summer 2005. Graduate Summer School of the Institute of Advanced Study / Park City Mathematical Institute.
- Fall 2003. Teaching Assistant of the Department of Mathematics, University of Puerto Rico, Río Piedras.
- Summer 2002. Research Experience for Undergraduate at the Computer Science Department, University of Kentucky.
- Summer 1999. Research Experience for Undergraduate at the Physics Department, University of Florida at Gainesville.

Scholarships

- 2006-2004 Computer Science, Engineering and Mathematics Scholarship. National Science Foundation.
- 2004-2003 Undergraduate Computer Science, Engineering and Mathematics Scholarship. National Science Foundation.

Funding

- Fondos Institucionales para investigación (FIPI). *A framework to unravel the structure of evolutive systems: An interdisciplinary approach.* August 1, 2017 - December 30, 2019. \$20,000.
- Programa de Iniciativas de investigación (PII). *Power spectrum analysis of high frequency data.* August 1, 2017. \$5,000.

Publications

- Peer-reviewed articles.
 - Aniel Nieves-González, Javier Rodríguez, and José Vega Vilca, *Wavelet Power Spectrum Analysis of ETF's Tracking Error*, The Journal of Risk Finance. **23** (2022), no. 2, 121-138, DOI 10.1108/JRF-04-2021-0058.
 - Wanda Velázquez, Wanda Villafañe, José Vega Vilca, and Aniel Nieves-González, *Actitud hacia la matemática de estudiantes en el curso Métodos Cuantitativos para Administración de Empresas*, Forum Empresarial. **26** (2021) no. 1, 67-98, DOI 10.33801/fe.v26i1.19493.
 - Aniel Nieves-González, Claudia P. Ruiz-Diaz, Carlos Toledo-Hernández, and Juan S. Ramírez-Lugo, *A mathematical model of the interactions between Acropora cervicornis and its environment*, Ecological Modelling. **406** (2019), 722, DOI 10.1016/j.ecolmodel.2019.04.004.
 - Jose C. Vega Vilca, Aniel Nieves-González, and Roxana Aparicio, *Use of PLS Components to Improve Classification on Business Decision Making*. International Journal of Data Mining & Knowledge Management Process (IJDKP). **8** (2018) no. 3.
 - Aniel Nieves-González, Chris Clausen, Mariano Marcano, Anita T. Layton, Harold E. Layton, and Leon C. Moore, *Fluid Dilution and Efficiency of Na⁺ Transport in a Mathematical Model of a Thick Ascending Limb Cell*, Am J Physiol Renal Physiol **304** (2013) F634-F652, DOI 10.1152/ajprenal.00100.2012.
 - Aniel Nieves-González, Chris Clausen, Anita T. Layton, Harold E. Layton, and Leon C. Moore. *Transport Efficiency and Workload Distribution in a Mathematical Model of the Thick Ascending Limb*, Am J Physiol Renal Physiol **304** (2013) F653-664 DOI 10.1152/ajprenal.00101.2012.
 - Mariano Marcano, Hun-Mo Yang, Aniel Nieves-González, Chris Clausen, and Leon C. Moore, *Parameter estimation for mathematical models of NKCC2 cotransporter isoforms*, Am J Physiol Renal Physiol **296** (2009) F369-F381, DOI 10.1152/ajprenal.00096.2008.
- Thesis and Dissertation.
 - *A Multiscale Model of the Thick Ascending Limb*. Aniel Nieves-González. Dissertation submitted to the Department of Applied

Mathematics & Statistics in fulfillment of the requirements for the Ph.D. degree. December 2010.

- *An Optimization Algorithm for a Sodium-Potassium-Chloride Cotransporter Model*. Aniel Nieves-González. Thesis submitted to the Department of Mathematics in fulfillment of the requirements for the M.S. degree. July 2006.
- Peer-reviewed poster publications.
 - *A dynamic model of the Interactions between Acropora Cervicornis and its environment*. Ruiz-Diaz, C. P., Nieves-González, A., Toledo-Hernández, C, and Roberson, L. M. 13th Coral Reef Symposium 2016. Poster ID: 526.
 - *Low basolateral Na⁺ pump activity in macula densa cells may be necessary to generate tubuloglomerular feedback responses*. Mónica Nadal-Quirós, Aniel Nieves-González, Leon C. Moore, and Mariano Marcano. The FASEB Journal, 2014; 28 (Abstract 1789).
 - *Sodium Transport in a Mathematical Model of a Macula Densa Cell*. Mónica Nadal-Quirós, Aniel Nieves-González, Leon C. Moore, and Mariano Marcano. The FASEB Journal, 2013; 27 (Abstract 912.25).
 - *A kinetic model for sodium transport via a non-gastric H⁺ (Na⁺)/K⁺ ATPase*. Mónica Nadal-Quirós, Aniel Nieves-González, Leon C. Moore, and Mariano Marcano. The FASEB Journal, 2012; 26 (Abstract 867.1).
 - *Dynamical Properties of the Thick Ascending Limb (TAL): a modeling study*. Aniel Nieves-González, Chris Clausen, Harold E. Layton, Anita T. Layton, and Leon C. Moore. The FASEB Journal, 2011; 25 (Abstract 665.8).
 - *Efficiency of sodium transport in a model of the Thick Ascending Limb (TAL)*. Aniel Nieves-Gonzalez, Chris Clausen, Mariano Marcano, Harold E. Layton, Anita T. Layton, and Leon C. Moore. The FASEB Journal, 2011 25 (Abstract 1041.21).
 - *Efficiency of sodium transport in the thick ascending limb*. Aniel Nieves González, Leon C. Moore, Chris Clausen, Mariano Marcano, Harold E. Layton, and Anita T. Layton. The FASEB Journal, 2010; 24 (Abstract No. 606.8).

- *Mathematical model of interactions between cell volume regulation and transport in cortical TAL cells.* Aniel Nieves-González, Chris Clausen, Harold E. Layton, and Leon C. Moore. The FASEB Journal, 2008; 22 (Abstract No. 1158.3).
- *Kinetic Models for Ammonium Transport by the NKCC2 Cotransporter.* Mariano Marcano, Hun-Mo Yang, Aniel Nieves-González, Chris Clausen, and Leon C. Moore. The FASEB Journal, 2007; 21 (Abstract No. 736.7).
- *Estimation of Acid-Base and NH_4^+ Transport Parameters in a TAL Cell Model Using Inverse Methods.* Aniel Nieves-González, Mariano Marcano, Chris Clausen, Harold E. Layton, and Leon C. Moore. The FASEB Journal, (Abstract No. 602.21).
- *Parameter Estimation for Models of NH_4^+ Transport by the Renal Na-K-2Cl Cotransporter.* Mariano Marcano, Hun-Mo Yang, Aniel Nieves-González, Chris Clausen, and Leon C. Moore. The FASEB Journal, (Abstract No. 602.22).
- *Kinetic Model for Ammonium Transport by NKCC2 Cotransporter.* Aniel Nieves-González, Mariano Marcano, Hun-Mo Yang, Chris Clausen, Leon C. Moore. Abstract for poster presentation, Mathematical Biosciences Institute, Ohio State University February 19-23, 2007.
- *An Optimization Problem for a $\text{Na}^+\text{-K}^+\text{-2Cl}^-$ Cotransporter Model.* Aniel Nieves-González, Mariano Marcano. Abstract for poster presentation, Seminar for Research in Mathematical Sciences (SIDIM in Spanish). February 2006.

Contributed Talks

- *Application of optimal control theory for pest management of coffee berry borers.* Giovanni Colón Cabezudo, Mariano Marcano, and Aniel Nieves-González. Presentation at the Seminario de Investigación de Ciencias Matemáticas (SIDIM). UPR, Mayagüez. March 2023.
- *Actitud de los estudiantes universitarios hacia las matemáticas.* Wanda Velázquez Rosado, Wanda Villafañe Cepeda, José C. Vega Vilca, and Aniel Nieves-González. Presentation at the Seminario de Investigación de Ciencias Matemáticas (SIDIM). UPR, Cayey. March 2020.
- *A mathematical model of the interactions between Acropora cervicornis and its environment.* Aniel Nieves-González, Claudia P. Ruiz-Díaz,

Carlos Toledo-Hernández, and Juan S. Ramírez-Lugo. Presentation at the “XV International Congress of Scientific Research”. Held in Santo Domingo, Dominican Republic. June 5-7 2019.

- *Dynamical Properties of the Thick Ascending Limb (TAL): a modeling study.* Aniel Nieves-González. Seminar at University of Puerto Rico, Río Piedras Campus. College of Natural Sciences Biomedical Research Training Center, November 2, 2012.
- *Efficiency of sodium transport in a model of the Thick Ascending Limb.* Aniel Nieves González, Leon C. Moore, Chris Clausen, Mariano Marcano, Harold E. Layton, and Anita T. Layton. Abstract for oral presentation in Modelling in Renal Physiology Mini-Symposium. Society of Mathematical Biology Meeting (SMB). Rio de Janeiro, July 2010.
- *A Lyapunov function for an Epithelial Cell Model of the Thick Ascending Limb.* Aniel Nieves-González, Mariano Marcano, and Leon C. Moore. Abstract for oral presentation, Seminar for Research in Mathematical Sciences (SIDIM in Spanish). February 2010.

Manuscripts in preparation or submitted to a peer-reviewed journal

- *COVID Fear and Investor Sentiment: A Wavelet Approach.* Aniel Nieves-González, Javier Rodríguez, and Herminio Romero.
- *A Mathematical Model of the Branching Growth of Acropora cervicornis in the Caribbean: Assessing the impact of climate change.* Aniel Nieves-González, Claudia P. Ruiz-Diaz, Carlos Toledo-Hernández, and Juan L. Sánchez-González.

Thesis/Dissertation Committee Participation

- M.S. thesis committee member for the following theses.
 - *Pest Management Methods for Coffee Berry Borer: An Application of Optimal Control Theory.* Giovanni G. Colón Cabezudo. July 2023. (Participation as coadvisor).
 - *Mathematical Model of Ion and Water Transport in a Lacrimal Gland Cell.* Teresa Pagán López. College of Natural Sciences. University of de Puerto Rico, Río Piedras campus. May 2020. (Participation as reader).

- *Mathematical Models of Renal Cells with Cell Volume Regulation*. Christian J. Dennis Aponte. College of Natural Sciences. University of de Puerto Rico, Río Piedras campus. June 2018. (Participation as reader).

Professional Affiliations

- Society for Industrial and Applied Mathematics.
- American Physiological Society.

Programming languages

- C, C++, FORTRAN, MATLAB[®], R and Mathematica[®].