

# DIANA PAOLA LIZARRALDE-BEJARANO

Ph.D. Mathematical Engineering – Mathematical Modeling – Parameter estimation

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## RESEARCH EXPERIENCE

### Research Assistant

Universidad EAFIT

August 2016 – December 2020    Medellín, Colombia

Project title: “Early warning system for Dengue in Neiva, Bello and Itagüí, a tool for decision-making for prevention and control”

March 2014 – October 2015    Medellín, Colombia

Project title: “Computational Design and Implementation of a Predictive Mathematical Model of Dengue Occurrence”

### Research Internship

University of Louisiana at Lafayette

October – December 2019    Louisiana, United States

Research stay under the supervision of Prof. Ralph Baker Kearfott. Department of Mathematics.

Princeton University

October 2015    New Jersey, United States

Research stay under the supervision of Ph.D. Jennifer Peterson. Department of Ecology and Evolutionary Biology

Universidad Nacional Autónoma de México

September - November 2014    Mexico D.F., Mexico

Research stay under the supervision of Prof. Lourdes Esteva. Science Faculty

## EDUCATION

Ph.D. in Mathematical Engineering – Biomathematics

School of Sciences, Universidad EAFIT

2016 – present    Medellín, Colombia

Thesis title: “Interval analysis for handling uncertainty in epidemiological models based on ODEs that simulate the transmission of infectious diseases with application to Dengue transmission”

M.Sc. in Applied Mathematics

School of Sciences, Universidad EAFIT

2013 – 2015    Medellín, Colombia

Thesis title: “Understanding epidemics from mathematical models. Details of the 2010 Dengue epidemic in Bello (Antioquia, Colombia)”

B.Sc. in Mathematics

Faculty of Engineering, Universidad Sergio Arboleda

2002 – 2007    Bogotá, Colombia

## SOFTSKILLS

Adaptability    Learning Potential  
Team Work    Flexibility    Responsibility  
MultiTasking    Data Modeling

## DATA ANALYSIS

Math    Algorithms  
Parameter estimation  
Mathematical Modeling  
Logic and analysis    Quantitative methods  
Web searching    Report writing

## SOFTWARE

- Scientific Mathematical Software  
Wolfram Mathematica v12+  
MATLAB MathWorks R2019a    MS Excel
- Programming languages  
Python 3.9    SQL    Wolfram Language  
L<sup>A</sup>T<sub>E</sub>X 2.7    MATLAB
- Text editors and others  
VS Code    Sublime Text    MS Word  
Google Docs    Overleaf  
MS Power Point    Beamer

## LANGUAGES

- Spanish native speaker
- English Upper-intermediate proficiency  
Reading ●●●●●●●●●●  
Listening ●●●●●●●●●●  
Writing ●●●●●●●●●●  
Speaking ●●●●●●●●●●
- Norwegian assessment exam at University of Bergen in Norway  
Written A2-B1    Oral A1-A2

## SPECIAL INTEREST

- Hobbies:** baking and cooking. I enjoy experimenting with new creative and practical cooking recipes
- Sports:** Tennis, hiking, and workouts
- Reading:** Police detective thriller books
- Other:** Taking care of pets (specially cats)

## SELECTED TALKS

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### Applied Mathematics Seminar

Department of Mathematics, University of Louisiana at Lafayette

📅 November 2018

📍 Louisiana, United States

Talk title: *“Interval analysis for the treatment of uncertainty in epidemiological models based on systems of ordinary differential equations”*

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### International Conference on Applied Mathematics and Informatics, ICAMI 2017

Universidad del Valle

📅 November 2017

📍 San Andrés, Colombia

Talk title: *“Stability analysis of nonlinear systems using optimization techniques”*

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### XVII Fall School of Mathematical Biology and XI National Meeting of Mathematical Biology

Universidad Veracruzana campus Xalapa

📅 November 2015

📍 Xalapa, Mexico

Talk title: *“Análisis de la epidemia de dengue ocurrida en Bello (Antioquia, Colombia) en 2010 a partir de Modelos Matemáticos”*

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### Latin American Congress of Biomathematics, Solabima Instituto de Biociencias, UNESP

📅 July 2015

📍 Botucatu, Brasil

Talk title: *“Model of Transmission of Dengue virus in Bello”*

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### VII International Congress of Training and Modeling in Basic Sciences

Universidad de Medellín

📅 May 2015

📍 Medellín, Colombia

Talk title: *“Modelo de Transmisión del virus del Dengue en Bello”*

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## TEACHING EXPERIENCE

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Faculty of Engineering, Universidad Distrital Francisco José de Caldas. Teaching Award in 2011 and 2012

📅 2009 - 2014

📍 Bogotá, Colombia

Calculus I-III

Differential Equations

Logic

Faculty of Engineering, Escuela Colombiana de Carreras Industriales ECCI

📅 2009 - 2013

📍 Bogotá, Colombia

Calculus I-III

Linear Algebra

Discrete Math

Department of Mathematics, Universidad Jorge Tadeo Lozano

📅 2011 - 2012

Differential Equations

Basic Mathematics

Department of Mathematics, Universidad Nacional

📅 Bogotá, Colombia

📍 2008

Calculus I

## PUBLICATIONS

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- Catano-Lopez, Alexandra, Daniel Rojas-Díaz, Henry Laniado, Sair Arboleda-Sánchez, María Eugenia Puerta-Yepes, and **Diana Paola Lizarralde-Bejarano** (Oct. 2019). An alternative model to explain the vectorial capacity using as example *Aedes aegypti* case in dengue transmission. *Heliyon* 5.10, e02577. DOI: 10.1016/j.heliyon.2019.e02577.
- **Lizarralde-Bejarano, Diana Paola**, Sair Arboleda-Sánchez, and María Eugenia Puerta-Yepes (Mar. 2017). Understanding epidemics from mathematical models: Details of the 2010 dengue epidemic in Bello (Antioquia, Colombia). *Applied Mathematical Modelling* 43, pp. 566–578. DOI: 10.1016/j.apm.2016.11.022.
- **Lizarralde-Bejarano, Diana Paola**, Daniel Rojas-Díaz, Sair Arboleda-Sánchez, and María Eugenia Puerta-Yepes (Mar. 2020). Sensitivity, uncertainty and identifiability analyses to define a dengue transmission model with real data of an endemic municipality of Colombia. *PLOS ONE* 15.3. Ed. by David A. Larsen, e0229668. DOI: 10.1371/journal.pone.0229668.
- Parra-Amaya, Mayra, María Puerta-Yepes, **Diana Lizarralde-Bejarano**, and Sair Arboleda-Sánchez (Mar. 2016). Early Detection for Dengue Using Local Indicator of Spatial Association (LISA) Analysis. *Diseases* 4.4, p. 16. DOI: 10.3390/diseases4020016.

## REFERENCES

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### Professional references

- **María Eugenia Puerta-Yepes**. Associated Prof. at Universidad EAFIT in Colombia. mpuerta@eafit.edu.co
- **Sair Arboleda Sánchez**. PhD in Biology, Senior Research. sairorieta@gmail.com
- **Ralph Baker Kearfott**. Professor Emeritus, Department of Mathematics, University of Louisiana at Lafayette rbk@lusfiber.net

### Personal references

- **Jonathan Prieto-Cubides**. Ph.D. Student at University of Bergen in Norway. jcu043@uib.no
- **Camilo Rodríguez Garzón**. Senior Software Developer at Pyxis Company. cam\_rod@hotmail.com
- **Ryan Graham**. Well Integrity Engineer at Equinor in Norway. rygram@gmail.com