

# Leidy Yissedt Lara Díaz

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## CONTACT INFORMATION

Centro de Investigación en Ingeniería Matemática CI<sup>2</sup>MA  
Universidad de Concepción  
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## PERSONAL INFORMATION

Date of Birth: June 21, 1989  
Place of Birth: Bogotá DC, Colombia  
Citizenship: Colombian  
Immigration Status: Permanent residency in Chile

## EDUCATION

**Universidad de Concepción**, Concepción, Región del Bío-Bío - Chile

PhD in Applied Sciences with major in Mathematical Engineering, June 2022.

- Thesis Topic: *Parameter identification and applications of phenomenological and mechanistic models of epidemic outbreaks*
- Advisors: Raimund Bürger and Gerardo Chowell.

**Universidade Federal do Paraná**, Curitiba, Paraná - Brasil

Mestra em Matemática, February 2017

- Thesis Topic: *Método de Gradientes Conjugados para Problemas Não Lineares*.
- Advisors: Lucas García Pedroso and Luiz Carlos Matioli

**Universidad del Valle**, Cali, Valle del Cauca - Colombia

Matemática, April 2013

- Thesis Topic: *Toros Mínimos en  $S^3$*
- Advisor: Heber Mesa Palomino

## PUBLICATIONS

1. Raimund Bürger, Gerardo Chowell, Ilja Kröker, **Leidy Y. Lara-Díaz**. “A computational approach to identifiability analysis for a model of the propagation and control of COVID-19 in Chile”. **Journal of Biological Dynamics** (manuscripts in submission)
2. Amna Tariq, Tsira Chakhaia, Sushma Dahal, Alexander Ewing, Xinyi Hua, Sylvia K. Ofori, Olaseni Prince, Argita D. Salindri, Ayotomiwa Ezekiel Adeniyi, Juan M. Banda, Pavel Skums, Ruiyan Luo, **Leidy Y. Lara-Díaz**, Raimund Bürger, Isaac Chun-Hai Fung, Eunha Shim, Alexander Kirpich, Anuj Srivastava, Gerardo Chowell. “An investigation of spatial-temporal patterns and predictions of the coronavirus 2019 pandemic in Colombia, 2020–2021”. **Plos Neglected Tropical Diseases**, vol. 16, no. 3, article: e0010228 (33pp), 2022.

3. Raimund Bürger, Gerardo Chowell, **Leidy Y. Lara-Díaz**. “Measuring differences between phenomenological growth models applied to epidemiology”. **Mathematical Biosciences**, vol. 334, article: 108558 (15pp), 2021.
4. Raimund Bürger, Gerardo Chowell, **Leidy Y. Lara-Díaz**. “Comparative analysis of phenomenological growth models applied to epidemic outbreaks”. **Mathematical Biosciences and Engineering**, 16, 2019.

CITATION AND OTHER  
QUANTITATIVE IMPACT  
METRICS

1. ResearchGate, Interest Score= 59.6, citations 52 and h-index=2.
2. Google Scholar, citations= 60 total citations, h-index = 2, and i10-index = 2.
3. Most cited paper: R. Bürger, G. Chowell, L.Y. Lara-Díaz (2019). “Comparative analysis of phenomenological growth models applied to epidemic outbreaks”. *Math. Biosc. and Eng.* 48 citations (Google Scholar), and 44 citations (ResearchGate).

RESEARCH  
EXPERIENCE

• **Research assistant:** October 2022 -March 2023

Project: Proyecto Basal FB210005, Resolución Ex N°10205 del 08 de Noviembre de 2021. Centro de Modelamiento Matemático (CMM) de la Facultad de Ciencias Físicas y Matemáticas de la Universidad de Chile.

Title of project: "Profundizar en el estudio de identificabilidad de parámetros en modelos epidemiológicos"

• **Research assistant:** January - July 2022

Project: ANILLO ACT210030, Science and/or Technology Research Ring Contest: Regular and Thematic Areas 2021 of the National Research and Development Agency, ANID, of the Ministry of Science, Technology, Knowledge and Innovation.

Title of project: "New models of flotation in the mining industry: simulation, experimental validation, and prediction tools for treatment of complex"

• **Research internship:** September - November 2019.

Developed at Georgia State University (USA) to work with Professor Gerardo Chowell.

• **Research assistant:** 2018

Project: MEC 80170119, International Collaboration Program of ANID (National Research and Development Agency of Chile), Short Term Modality.

Title of project: "Mathematical Epidemiology: Numerical Methods, Applications and Public Health"

	<ul style="list-style-type: none"> <li>• Member in Committee Academic and Research on CEAD Palmira for the “Escuela de Ciencias Básicas, Tecnología e Ingeniería” February - December 2014</li> </ul>
AWARDS	<ul style="list-style-type: none"> <li>• Meritorious thesis, Facultad de Ciencias Naturales y Exactas Resolución No 277, Universidad del Valle. Nov 2012</li> </ul>
SCHOLARSHIPS	<ul style="list-style-type: none"> <li>• Scholarship Doctorado Nacional 2019, Programa Formación de Capital Humano Avanzado ANID, Chile. January 2019.</li> <li>• Postgraduate Scholarship, Dirección de Postgrado, Universidad de Concepción, Chile, March 2017.</li> <li>• OAS-Coimbra Group of Brazilian Universities (GCUB), Scholarship Program 2014. February 2015.</li> </ul>
TEACHING EXPERIENCE	<p><b>Universidad de Concepción - Chile</b></p> <p><i>Lecturer</i> <span style="float: right;"><b>March-Dec 2022</b></span></p> <p>Undergraduate courses.</p> <ul style="list-style-type: none"> <li>• Numerical methods, August- December (Classroom)</li> <li>• Linear Algebra, August- December(Classroom)</li> <li>• Mathematics 2, March-July (Classroom)</li> </ul> <p>Graduate courses.</p> <ul style="list-style-type: none"> <li>• Numerical Analysis for differential equations, August- December (Classroom)</li> <li>• Numerical Analysis for differential equations, March-July (Virtual)</li> </ul> <p><b>Escuela Emalca Virtual Chile: “Matemáticas y sus Aplicaciones”, Universidad de Chile - Chile</b></p> <p><i>Instructor</i> <span style="float: right;"><b>January 10-21, 2022</b></span></p> <p>Undergraduate short courses,</p> <ul style="list-style-type: none"> <li>• Conservation laws and sedimentation applications. (Virtual)</li> </ul> <p><b>Universidad Católica de la Santísima Concepción - Chile</b></p> <p><i>Assistant lecturer</i> <span style="float: right;"><b>March 2018- July 2018</b></span></p> <p>Undergraduate courses.</p> <ul style="list-style-type: none"> <li>• Calculus 1 (Classroom)</li> <li>• Algebra (Classroom)</li> <li>• Calculus 2 (Classroom)</li> </ul> <p><b>Universidad Nacional Abierta y a Distancia UNAD - Colombia</b></p> <p><i>Lecturer</i> <span style="float: right;"><b>July 2013- December 2014</b></span></p> <p>Undergraduate courses.</p> <ul style="list-style-type: none"> <li>• Linear Algebra, July 2013 - Present (Classroom)</li> <li>• Probability, July 2013 - Present (Classroom and Virtual)</li> <li>• Differential Calculus, July 2013 - Present (Classroom)</li> <li>• Mathematical Logic, February 2014 - July 2014 (Classroom)</li> </ul> <p><b>Corporación Universitaria UNICUCES - Colombia</b></p> <p><i>Lecturer</i> <span style="float: right;"><b>February 2014-December 2014</b></span></p> <p>Undergraduate courses.</p> <ul style="list-style-type: none"> <li>• Discrete Mathematics, July 2014 - December 2014 (Classroom)</li> <li>• Linear Algebra, February 2014 - December 2014 (Classroom)</li> </ul>

- Mathematical Logic, February 2014 - December 2014 (Classroom)

**Universidad del Valle - Colombia**

*Instructor*

Course: Logic and Number System

Semillero de Matemáticas

**March-June 2013**

CONFERENCE AND  
SEMINARS TALKS

- **Talk:** “Identifiability analysis for a model of the propagation of COVID-19 in Chile”. Mathematical Epidemiology Workshop, CI<sup>2</sup>MA and Universidad de Concepción, Chile  
Jun 17, 2022
- **Talk:** “Aplicación de una aproximación computacional para estudiar la identificabilidad de los parámetros en un modelo compartimental para describir la enfermedad infecciosa de COVID-19.” Quinto Workshop de Modelamiento Matemático de Sistemas Biológicos, UTEM, Chile  
Jan 19-21, 2022
- **Talk:** “Enfermedades Infecciosas y modelos epidemiológicos.” Webinar -Tópicos Modernos de Física y Matemática, Facultad de Ingenierías de la Universidad del Sinú - Elías Bechara Zainum, Montería - Colombia  
Oct 22, 2021
- **Talk:** “Un abordaje regional al estudio de la propagación y control del COVID-19 en Chile.” Seminario CMM Covid-19, Centro de Modelamiento Matemático, Universidad de Chile, Chile  
Apr 14, 2021
- **Talk:** “Enfermedades Infecciosas y modelos epidemiológicos.” Coloquio de Matemática Aplicada, Escuela de Matemática, Universidad Nacional, Costa Rica  
May 13, 2020
- **Talk:** “ Measuring the distance between two growth models.”, Seminario de Análisis Numérico y Modelación Matemática de Estudiantes, SANMoMa-Graduados, CI<sup>2</sup>MA and Universidad de Concepción, Chile  
Dec 11, 2019
- **Poster:** “Comparative analysis of phenomenological growth models applied to epidemic outbreaks.” Scientific Computing meets Machines Learning and Life Sciences, Texas Tech University in Lubbock, TX , USA  
Oct 7-9, 2019
- **Talk:** “Una metodología para la calibración y comparación de modelos de crecimiento epidémico.” Tercer Workshop de Modelamiento Matemático de Sistemas Biológicos, UTEM, Chile  
Jan 2019
- **Talk:** “Indices del Operador de Fredholm.” Villa de Leyva Summer School 2013 “Geometric, Algebraic and Topological Methods For Quantum Field Theory”, Colombia  
Jul 2013
- **Talk:** “Can One Hear the shape of Drum?” Villa de Leyva Summer School 2011 “Geometric, Algebraic and Topological Methods For Quantum Field Theory”, Colombia  
Jul 2011

CONFERENCE AND  
WORKSHOPS  
ATTENDED

- 5th CI2MA workshop: Mathematical modelling and simulation for bioprocesses, wastewater treatment and mineral processing. Universidad de Concepción - Chile.  
July 5-6, 2022
- XVI Seminario Internacional de Biomatemática SEMBIOMAT, Perú  
December 17-22, 2021
- X Congreso Internacional de Matemática Aplicada y Computacional, Perú  
August 19-28, 2021
- XV Seminario Internacional de Biomatemática SEMBIOMAT, Perú  
September 11-26, 2020
- Infectious Disease Dynamics Lecture Series, School of Public Health, Georgia State University, USA  
August 5-10, 2019
- Sixth Chilean Workshop on Numerical Analysis of Partial Differential Equations 2019, Universidad de Concepción - CI<sup>2</sup>MA. Chile  
January 2019.
- Fourth CI<sup>2</sup>MA Workshop: Mathematical Models in Epidemiology, Universidad de Concepción. Chile  
June 18-19, 2018
- Third CI<sup>2</sup>MA Workshop: Mathematical modelling and simulation for bioprocesses, wastewater treatment and mineal processing. Universidad de Concepción. Chile  
September 2017.
- Santiago Numérico III: Noveno Encuentro de Analisis Numerico de Ecuaciones Diferenciales Parciales. Pontificia Universidad Catolica de Chile - Chile.  
June 2017.
- Escuela de Geometría 2012. Universidad del Valle - Colombia  
June 2011
- Escuela de Física Matemática 2011. Universidad de los Andes - Colombia  
May 2011
- ICAMI International Conference on Applied Mathematics and Informatics. Universidad del Valle - Colombia  
December 2010

REFERENCES

- Raimund Bürger E-mail: rburger@ing-mat.udec.cl  
Full Professor, CI<sup>2</sup>MA and Department of Mathematical Engineering  
Universidad de Concepción  
Chile
- Gerardo Chowell E-mail: gchowell@gsu.edu  
Professor & Chair, Department of Public Health Sciences  
Georgia State University  
Atlanta, USA
- Gabriel Gatica E-mail: ggatica@ci2ma.udec.cl  
Full Professor, CI<sup>2</sup>MA and Department of Mathematical Engineering

Universidad de Concepción  
Chile