



Curriculum Vitae

PERSONAL INFORMATION



Dayron Chang Dominguez

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Gender Male | Date of birth 8th of March, 1988 | Nationality(-ies) Cuban

SCIENTIFIC CAREER

2021 - Present

researcher assistant

Institute for Analysis and Numeric. Otto-von-Guericke University
Universitätsplatz 2, 39106 Magdeburg Germany

Modeling and simulation of optimization of temporal multiscale problems. Applications in hydrogen electrolysis and fluid-structure interaction damage problems.

2020 - 2021

Researcher

Marine Meteorology Center. Institute of Meteorology of Cuba.
Loma de Casablanca, Regla, Havana Cuba

Member of the research team of the Lagrangian model PETROMAR for oil spread and objects adrift in the Caribbean Sea. Development of numerical methods for particle spreading with ordinary differential equations.

2013 - 2020

Researcher / Meteorology Specialist

Agro-meteorology Center. Institute of Meteorology of Cuba
Loma de Casablanca, Regla, Havana Cuba

Research and implementation of computational-numerical models for simulation of pathogen spread, yields, and climate change effects in crops, etc.

Administration of high-performance computational infrastructure dedicated to running simulations.

Research interests

Temporal multiscale modeling and simulation; Damage in fluid-structure interactions; Data structures and algorithms; Numerical solutions to differential equations.

EDUCATION

2018

Master degree in Mathematical Sciences

Universidad de la Habana, Havana Cuba

2013

Degree in Computer Science

Universidad de la Habana, Havana Cuba

2021 - Present

International Max Planck Research School for Advanced Methods in Process and Systems Engineering (IMPRS Pro-Eng)

IMPRS ProEng

Structured PhD program, Max Planck Institute for Dynamics of Complex Technical Systems Magdeburg (MPI), Magdeburg Germany

Main supervisor: Prof. Dr. Thomas Richter, Institute for Analysis and Numerik, Faculty of Mathematics, Otto-von-Guericke University Magdeburg.

Second supervisor: Prof. Dr.-Ing. Kai Sundmacher, Process Systems Engineering Max Planck Institute for Dynamics of Complex Technical Systems and Otto-von-Guericke University Magdeburg

The research project is focused on the study of efficient gradient-based optimization methods for estimating parameters of temporal multiscale complex differential problems. In particular, its application to material degradation during water electrolysis and the assessment of damage in fluid-structure interaction problems.

2018 The paradox of fire: a multidisciplinary approach to fire management in a flammable world

CELFI programme

Postgraduate course, Teófilo Tabanera Space Center, Córdoba Argentina

Speakers and Organizers

Lic. Mario Lanfri, CONAE, CAEARTE, Argentina

Dr. Emilio Chuvieco, Geography Department, Member of (GOF/GOLD) program, FAO and NASA, University of Alcalá, Spain

Dr. Alan Ager, Research forester, USDA Forest Service, Missoula Fire Sciences Laboratory, Missoula MT, United States

Prof. Dr. Ross Bradstock, University of Wollongong, Australia and Director of the Centre for Environmental Risk Management of Bushfires, Australia

2018 Applications of satellite information in agricultural meteorology

INSMET, UNPD of Cuba and Russia

Course, United Nations Programme for Development Cuba headquarters, Havana Cuba

Speakers and Organizers

Dr. Oleg Virchenko, Agricultural Meteorology Institute of the Russian Federation, Russia

Dr. Celso Pazos Alberdi, Director of the Meteorology Institute of Cuba, Havana Cuba

MSc. Eva Mejías Sedeño, Head of the agricultural meteorology center, Meteorology Institute of Cuba, Havana Cuba

2016 Application of satellite information to tropical meteorology

AECID

Course at Spain Cooperation Training Center, La Antigua Guatemala

Speakers and Organizers

Dr. Manuel Patricio López Carmona, Head of OMD in Rota, AEMET, Spain

Dr. Juan Carlos Ceballos Benedicto, researcher of CPTEC, Brasil

Dr. Fausto Polvorinos Pascual, Head of GPV of Málaga, AEMET, Spain

Dr. José Prieto Fernández, EUMETSAT

FURTHER ACADEMIC ACTIVITIES

2023 - present

Secretary Officer

Student Chapter of SIAM Magdeburg

Otto-von-Guericke University Magdeburg, Universitätsplatz 2, 39106 Magdeburg, Germany

PERSONAL SKILLS

Mother tongue(s) Spanish

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2
German	B1	B1	B1	B1	B1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2: Proficient user
Common European Framework of Reference (CEF) level

Other skills

- CISCO network technologies (switches and firewall management).
- VMware virtualization infrastructure.
- Experience with HPC hardware infrastructure.
- Advanced programming skills in Python and C++.
- Linux and Windows operating systems.
- Skills in LaTeX and Office Suite (or Linux alternatives).
- Gascoigne; NGSolver.
- Git.

PUBLICATIONS

- Dayron Chang Dominguez, An Phuc Dam, Shaun M. Alia, Thomas Richter, and Kai Sundmacher. Application of a temporal multiscale method for efficient simulation of degradation in pem water electrolysis under dynamic operating conditions. *Computers & Chemical Engineering*, 198:109083, 2025
- Dayron Chang Dominguez, An Phuc Dam, Thomas Richter, Kai Sundmacher, and Shaun M. Alia. Application of a temporal multiscale method for efficient simulation of degradation in pem water electrolysis under dynamic operation, 2024
- Humberto L. Varona, Carlos Noriega, Amilcar E. Calzada, Carmen Medeiros, Alexander Lobaina, Alejandro Rodriguez, Dayron Chang, Dailin Reyes, Julia Araujo, Marcus Silva, Marcio das Chagas Moura, and Moacyr Araujo. Effects of meteo-oceanographic conditions on the weathering processes of oil spills in northeastern brazil. *Marine Pollution Bulletin*, 198:115828, January 2024
- Dayron Dominguez, Leopold Lautsch, and Thomas Richter. A variational approach for temporal multiscale problems and its application to adaptivity and optimization. *PAMM*, sep 2023
- Abel Centella-Artola, Arnoldo Bezanilla-Morlot, Roberto Serrano-Notivoli, Ranses Vázquez-Montenegro, Maibys Sierra-Lorenzo, and Dayron Chang-Dominguez. A new long term gridded daily precipitation dataset at high-resolution for cuba (cubaprec1). *Data in Brief*, 48:109294, June 2023
- Amilcar E. Calzada, Humberto L. Varona, Carlos Noriega, Dayron Chang, Alejandro Rodriguez, Dailin Reyes, and Moacyr Araujo. Simulation of oil slick drift with the petromar-3d model in case of offshore spills in waters adjacent to the brazilian northeast. 2021
- Amilcar E. Calzada, Iván Delgado, Carlos Ramos, Frank Pérez, Dailín Reyes, Dayana Carracedo, Alejandro Rodríguez, Dayron Chang, Javier Cabrales, and Alexander Lobaina. Lagrangian model PETROMAR-3d to describe complex processes in marine oil spills. *Open Journal of Marine Science*, 11(01):17–40, 2021
- Alejandro Rodríguez, Dayron Chang, Amilcar E. Calzada, Dayana Carracedo, Dailín Reyes, Alexander Lobaina, Reinaldo Casals, Jessica Hernández, and Javier Cabrales. Probabilistic modeling of oil spills at the exclusive economic zone of cuba using petromar-3d model. *Journal of Geoscience and Environment Protection*, 09(06):21–34, 2021
- European Commission. Joint Research Centre. *La modelación biofísica y agroclimática: asimilación y aplicación de la plataforma BioMa en Cuba para evaluar los impactos del cambio climático y opciones de adaptación*. Publications Office, LU, 2019