Rosa Maria Vargas Magaña
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Curriculum Vitæ

Personal Information

Place of birth	Mexico City, Mexico
Personl website	`https://rosavargas.github.io/`

Research Interests

Nonlinear waves, Hamiltonian systems, Surface water waves, Whitham-Boussinesq water wave models, Pseudo-differential operators, Scientific computation, Fluid dynamics, Geophysical and Engineering applications.

Education

08/2017	**PhD in Mathematics** Universidad Nacional Autónoma de México, Mexico Thesis: Nonlocal shallow water wave models over variable topography. Supervisor: Prof. Panayotis Panayotaros `http://132.248.9.195/ptd2017/junio/0760827/Index.html`
08/2012- 01/2017	PhD student, Universidad Nacional Autónoma de México, Mexico
02/2011-01/2012	PhD student, Institute of Pure and Applied Mathematics, IMPA, Brazil
09/2010	**Master of Science in Mathematics** Universidad Nacional Autónoma de México, Mexico Thesis: Planar Cantor sets with Hausdorff dimension greater than one with projections in all directions with positive Lebesgue measure. Supervisors: Prof. Héctor Méndez Lango `http://132.248.9.195/ptb2010/septiembre/0661895/Index.html`
04/2008	**Bachelor of Science in Mathematics** Universidad Nacional Autónoma de México, Mexico Thesis: Smale horseshoe. Topological and Dynamical aspects. Supervisors: Prof. Héctor Méndez Lango and Prof. Jefferson King `http://132.248.9.195/ptd2008/agosto/0630031/Index.html`

Employment

Since 12/2018	**Postdoctoral Position at the University of Edinburgh** Working with Professor Noel Smyth at the School in Mathematics in the University of Edinburgh
08/2018- 12/2018	**Craig Huneke Postdoctoral Position at MSRI** in the Fall Program "Hamiltonian Systems from topology to applications through analysis"at Mathematical Sciences Research Institute, University of California Berkeley
01/2017- 06/2017	**Research assistant** Working with Professor A. A. Minzoni Alessio at Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas, Universidad Nacional Autónoma de México, Mexico
01/2016 - 06/2017	**Teaching assistant** Faculty of Science, Universidad Nacional Autónoma de México, Mexico
08/2007 - 07/2010	**Teaching assistant** Faculty of Science, Universidad Nacional Autónoma de México, Mexico

Scholarships

11/2018- 10/2020	Postdoctoral Fellowship supported by Consejo Nacional de Ciencia y Tecnología, México
08/2018- 12/2019	Huneke Endowed Postdoctoral Fellowship in the Hamiltonian systems, from topology to applications through analysis program during the Fall 2018 semester
08/2012- 07/2016	Graduate Fellowship supported by Consejo Nacional de Ciencia y Tecnología, México
02/2011- 01/2012	Graduate Fellowship supported by Conselho Nacional de Desenvolvimento Científico e Tecnológico, Brazil
02/2008- 01/2010	Graduate Fellowship supported by Consejo Nacional de Ciencia y Tecnología, México

Publications

2021	Vargas-Magaña R. M., Marchant T. R., and Smyth N. F. *Numerical and analytical study of undular bores governed by the full water wave equations and bi-directional Whitham-Boussinesq equations*, *Physics of Fluids*, 33, 067105 `https://doi.org/10.1063/5.0050067`
2019	Vargas-Magana, R. M., Panayotaros, P. and Minzoni, A. A. *Linear Modes for Channels of Constant Cross-Section and Approximate DirichletNeumann Operators.* Water Waves 1, 343370.
2016	Vargas-Magana, R. M., and Panayotaros, P. *A WhithamBoussinesq long-wave model for variable topography.* Wave Motion, 65, 156-174.
2012	Lango, Héctor Méndez, and Vargas Magana R. M. *Constelaciones en el plano.* (Spanish) Miscelánea Mat. No. 55, Journal of the Mexican Mathematical Society

Manuscript in preparation

➤ Panayotaros P., Vargas-Magana R. M. *Water wave problem with inclined walls*

Theses

- PhD thesis: Nonlocal shallow water wave models over variable topography. (Spanish and English)
  `http://132.248.9.195/ptd2017/junio/0760827/Index.html`

- Master thesis: Planar Cantor sets with Hausdorff dimension greater than one with projections
  in all directions with positive Lebesgue measure. (In spanish)
  `http://132.248.9.195/ptb2010/septiembre/0661895/Index.html`

- Bachelor thesis: Smale horseshoe. Topological and dynamical aspects. (In spanish) `http://132.248.9.195/ptd2008/agosto/0630031/Index.html`

Awards

08/2016	SIAM Student Travel Award to attend the Conference on Nonlinear Waves and Coherent Structures, Philadelphia, PA, USA
01/2013	Travel Award to attend the Pan-American Advanced Studies Institute Valparaiso, Chile

Talks at Conferences/ Workshops and Colloquium Talks

07/2021	Dispersive Shock Waves in atmospheric and oceanic events. An accurate description of these phenomena through Whitham-Boussinesq water wave models.
	Workshop: New Horizons in dispersive hydrodynamics,
	Isaac Newton Institute of Mathematical Sciences, University of Cambridge
07/2021	Análisis y modelación de fenómenos naturales determinados por ecuaciones no lineales y dispersivas
	Seminario de Matemáticas en Colima, **Universidad de Colima**
10/2020	Fully dispersive and nonlocal Hamiltonian shallow water wave model for variable depth:
	Scopes in Physical Oceanography and Atmospheric Sciences.
	Department of Physical Oceanography
09/2020	Surface water waves and internal waves in stratified fluids: Modern challenges in the theory and modeling of these solutions that describe phenomena and processes on Earth.
	Institute of Atmospheric Sciences, UNAM
04/2020	Webinar: Impacto de las medidas de control en la evolución del brote COVID-19 en el mundo: China, Italia, Austria, Alemania, Francia, España, Reino Unido
	Café Científico, Instituto de Física de la UNAM
07/2020	Webinar: Impacto de las medidas de control en la evolución del brote COVID-19 en México a través de 37 zonas metropolitanas
	CINVESTAV, Mexico City Coloquio Virtual del Departamento de Fsica
06/2019	**BIRS-CMO Workshop:**
	Hamiltonian PDEs: KAM, Reducibility, Normal Forms and Applications
	Casa México Oaxaca, México
02/2019	Seminar on Waves and flows
	School of Mathematics at University of Edinburgh
12/2018	Special event at MSRI with Noetherian Ring and women at MSRI
	Mathematical Sciences Research Institute, Berkeley, California
11/2018	Post-doc Workshop
	Mathematical Sciences Research Institute, Berkeley, California
10/2018	Hamiltonian Seminar
	Mathematical Sciences Research Institute, Berkeley, California
04/2018	Coloquio Oaxaqueño de Matemáticas
	Instituto de Matematicas UNAM Unidad Oaxaca, Oaxaca, Mexico
02/2018	2do Encuentro Nacional de Jovenes Matemáticos
	Institute of Mathematics-UNAM, Mexico City, Mexico
	Title: Nonlocal shallow water wave models over variable topography.
02/2018	Panel Discussion on Women at the Graduate Program in Mathematics at UNAM
	Institute of Applied Mathematics and Systems -UNAM, Mexico City, Mexico
11/2017	23th Workshop on Mathematical Analysis
	UAM-Azcapotzalco, Mexico City, Mexico
	Title: Nonlocal shallow water wave models over variable topography.
07/2017	Mathematical Congress of the Americas 2017,
	MacGill University, Montreal, Canada
	Title: Nonlocal shallow water wave models over variable topography.
05/2017	Taller UNAM-U. Bath- CIMAT Matemáticas Aplicadas: medios continuos y biomatemáticas, Mexico City, Mexico
11/2016	BIRS Workshop on Theoretical and Computational Aspects of Nonlinear Surface Waves,
	BIRS-Banff, Calgary, Canada
10/2016	Dynamics Days Latin America and the Caribbean, Puebla, Mexico
08/2016	**SIAM Conference on Nonlinear Waves and Coherent Structures**, Philadelphia, Pa., USA
03/2016	Nonlinear Guided Waves VIII, Oaxaca, Mexico
11/2015	**68th Annual Meeting of the APS Division of Fluid Dynamics**, Boston, MA, USA
03/2015	Seminar of Physics and Computation Faculty of Science, Mexico City, Mexico
11/2014	20th Workshop on Mathematical Analysis, Mexico City, Mexico

▬▬▬ Other Attended Workshops and Conferences, Posters sessions

04/2020 to 07/2020	Waves in One World is a weekly webinar series, bringing together those within the Mathematical Sciences waves community. This series focuses on waves across the sciences, including fluid dynamics, quantum gases, acoustics and many others aligned with research groups across the world, such as the SIAM focus group in Nonlinear Waves and Coherent Structures. `https://sites.google.com/view/waves-ow/home`
10/2019	Statistics Afternoon on Risk, Noise and Extremes Bayes Center, University of Edinburgh and Heriot Watt, Edinburgh, UK
07/2019	Summer School in Analysis of PDEs and Fluid Dynamics Bayes Center, University of Edinburgh and Heriot Watt, Edinburgh, UK
06/2019	17th School on Interaction between Dynamical Systems, and Partial Differential equations Centre de Recerca Matmatica, Barcelona, Spain
11/2018	Hamiltonian systems, from topology to applications through analysis II MSRI, Berkeley, California, USA
10/2018	Hamiltonian systems, from topology to applications through analysis I MSRI, Berkeley, California, USA
08/2018	Introductory Workshop: Hamiltonian systems, from topology to applications through analysis, MSRI, Berkeley, California, USA
08/2018	Connections for Women: Hamiltonian Systems, from topology to applications through analysis, MSRI, Berkeley, California, USA
05/2017	Seminario Enzo Levi 2017, Centro ABACUS Cinvestav, Toluca, Mexico
06/2016	Frontiers in Applied and Computational Mathematics, Newark, New Jersey, USA
06/2015	First Inria-Mexico Workshop in Applied Mathematics and Computer Science, Mexico City, Mexico
04/2015	Diffuse Fields and the seismic response of the Mexico City Valley, Mexico City, Mexico
12/2014	Workshop on Geometry and Mechanics, Oaxaca, Mexico
05/2013	Summer School on MEMS, Mexico City, Mexico
01/2013	PASI The science of predicting and understanding tsunami, storm surges and tidal phenomena, Universidad Técnica Federico Santa María, Valparaiso, Chile
06/2012	Summer school: Dispersive Waves Equations, Mexico City, Mexico
02/2012	Workshop of Topology and Dynamics, Rio de Janeiro, Brazil

Teaching Assistant

Spring 2017	Variational Calculus (4hours/week), Sciences School UNAM
Fall 2016	Partial Differential Equations (4hours/week), Sciences School UNAM
Spring 2016	Partial Differential Equations (4hours/week), Graduate Program in Mathematical Sciences UNAM
Spring 2010	Differential Calculus I (6hours/week), Sciences School UNAM
Fall 2009	Differential Calculus III (6hours/week), Sciences School UNAM
Spring 2009	Differential Calculus II (6hours/week), Sciences School UNAM
Fall 2008	Differential Calculus I (6hours/week), Sciences School UNAM
Fall 2007	Complex Variable (4hours/week), Sciences School UNAM
Fall 2007	Modern Geometry (4hours/week), Sciences School UNAM
Spring 2007	Differential Calculus II(6hours/week), Sciences School UNAM

Programming skills

Scientific computing with Matlab, Fortran. Original and Advanced codes for Computational Fluid Dynamics (CFD)

Languages

Spanish	Native speaker
English	Advanced
French	Delf Second Degree
Portuguese	Intermediate

Mathematical Reviews

Journal Water Waves, Springer

Participation in Projects

2018   National Science Foundation. Supporting the Program in Hamiltonian systems, from topology to applications through analysis

2016   Universidad Nacional Autónoma de México, Mexico
Programa de Apoyo a Proyectos de Investigación e Innovación Tecnológica IN 103916

2017   Consejo Nacional de Ciencia y Tecnología, México
Programa para un Avance Global e Integrado de la Matemática Mexicana 2656674

Scientific Association Co-funder

1. *Científicæs Mexicanæs en el extranjero*
   website: `https://mexiciencia.github.io/`,
   Twitter: `https://twitter.com/MexiCiencia`, Facebook: `https://www.facebook.com/MexiCiencia2020/`

   Científicos Mexicanos en el extranjero is an independent science collective committed to making science visible and accessible for society. We are driven to communicate complex - possibly alarming - information by using scientific thinking an scientific analysis that derives in the creation of apps, interactive maps, infographics, academic reports, academic writings, and interviews about topics the world doesn't have enough clarity on yet. We are convincing that the world needs more scientists that translate their expertise into dialogue with the public about topics that cause worry and anxiety globally to mitigate the fear and assumptions that engender in uncertainty.

   At the core, we are a collective of active members of the science community from different fields of Science with a postdoctoral position spanned in leading institutions in the world such as University of Edinburgh, University de Barcelona, Universidad de Lisboa, Purdue University, University of Texas, University of Manchester, Universidad de Madrid, Universidad de Linz, Universidad de Paris our research projects are all linked with among several leading institutions in Mexico.

Referees

- Professor Panayotis Panayotaros,
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- Professor Noel Smyth,
  School of Mathematics,
  University of Edinburgh
  Scotland, United Kingdom
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- Associate Researcher Carlos García Azpeitia,
  Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas
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- Professor Héctor Méndez Lango,
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