
PERSONAL INFORMATION

Place of birth Mexico City, Mexico
Homepage <https://rosamariavargasmagana.wordpress.com>

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

1. Vargas-Magana, R.M., Panayotaros, P. and Minzoni, A.A. *Linear Modes for Channels of Constant Cross-Section and Approximate Dirichlet-Neumann Operators*. Water Waves 1, 343370 (2019). <https://doi.org/10.1007/s42286-019-00010-z>
2. Vargas-Magana, R. M., and Panayotaros, P. *A Whitham-Boussinesq long-wave model for variable topography*. Wave Motion, 65, 156-174 (2016). <https://doi.org/10.1016/j.wavemoti.2016.04.013>
3. Lango, Héctor Méndez, and Vargas Magana R. M. *Constelaciones en el plano*. (Spanish) Miscelánea Mat. No. 55 (2012), Journal of the Mexican Mathematical Society https://miscelaneamatematica.org/welcome/default/download/tbl_articulos.pdf2.b78e5ad173b88188.353530352e70646.pdf

Theses

4. PhD thesis: Nonlocal shallow water wave models over variable topography. (Spanish and English) <http://132.248.9.195/ptd2017/junio/0760827/Index.html>
5. 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>
6. Bachelor thesis: Smale horseshoe. Topological and dynamical aspects. (In spanish) <http://132.248.9.195/ptd2008/agosto/0630031/Index.html>

In preparation

- * Vargas-Magana R. M., Smyth N.F. and, Marchant T. *Numerical and analytical study of undular bores governed by the full water wave equations and bi-directional Whitham-Boussinesq equations*
To be submitted to *Physics of Fluids*.
- * Panayotaros P., Vargas-Magana R. M. *Water wave problem with inclined walls*

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

- 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, Cdmx, Coloquio Virtual del Departamento de Física
- 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 Oaxaqueo de Matemáticas
Instituto de Matemáticas UNAM Unidad Oaxaca, Oaxaca, Mexico
- 02/2018 2do Encuentro Nacional de Jóvenes Matemáticos
Instituto de Matemáticas 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
IIMAS-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,
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

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| 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 Matematica, 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 tsunamis, 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

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| 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

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| 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. *Científicos Mexicanos 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 and 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 convinced 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,
Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas
Universidad Nacional Autónoma de México
Mexico
Phone: +52 55 56 22 36 00
e-mail: panos@mym.iimas.unam.mx,
- Professor Noel Smyth,
School of Mathematics,
University of Edinburgh
Scotland, United Kingdom
Phone: 44 (0) 131 650 5080
email: N.Smyth@ed.ac.uk
- Associate Researcher Carlos García Azpeitia,
Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas
Universidad Nacional Autónoma de México
Mexico
e-mail: cgazpe@mym.iimas.unam.mx,
- Professor Héctor Méndez Lango,
Departamento de Matemáticas, Facultad de Ciencias
Universidad Nacional Autónoma de México
Ciudad de México, México
Phone: 562.24868 Ext. 45756
email: matatias55@gmail.com, hml@ciencias.unam.mx