

# Valente Ramírez

POSTDOCTORAL FELLOW · INSTITUT DE RECHERCHE MATHÉMATIQUE DE RENNES

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## Position

### Institut de Recherche Mathématique de Rennes

Rennes, France

CENTRE HENRI LEBESGUE (LABEX)

October 2017 – PRESENT

- Postdoctoral Fellow
- Marie Skłodowska-Curie Fellow
- Campus France PRESTIGE Fellow

## Education

### Cornell University

Ithaca NY, United States

PH.D. IN MATHEMATICS (AUGUST 2017)

2012 – 2017

- Thesis: “Quadratic vector fields on the complex plane: rigidity and analytic invariants”
- Advisor: Yulij Sergeevich Ilyashenko

### Universidad Nacional Autónoma de México (UNAM)

Mexico City, Mexico

B.SC. IN MATHEMATICS (HONS.)

2007 – 2011

- Thesis: “Strong topological invariance of the monodromy group at infinity for quadratic vector fields”
- Advisor: Laura Ortiz-Bobadilla

### University of California Berkeley

Berkeley CA, United States

INTERNATIONAL EXCHANGE STUDENT

Fall 2009

## Research Interests

My research belongs to the area of complex geometry. I’m mainly interested in the study of holomorphic foliations, vector fields and self-maps on complex manifolds. These objects lay right at the intersection of the theories of dynamical systems, topology, complex analytic and algebraic geometry. The questions I’m interested in are both at the local and global levels. In fact, the interaction between the local and global behavior is of particular interest to my research.

## Publications

- [1] “Strong topological invariance of the monodromy group at infinity for quadratic vector fields”. *J. Singul.* **9** (2014), 193–202. DOI: [10.5427/jsing.2014.9n](https://doi.org/10.5427/jsing.2014.9n).
- [2] “The utmost rigidity property for quadratic foliations on  $\mathbb{P}^2$  with an invariant line”. *Bol. Soc. Mat. Mex.* **23** (2017), no. 2, 759–813. DOI: [10.1007/s40590-016-0127-5](https://doi.org/10.1007/s40590-016-0127-5).
- [3] “An example of a non-algebraizable singularity of a holomorphic foliation”. *Enseign. Math.* **62** (2016), no. 1/2, 7–14. DOI: [10.4171/LEM/62-1/2-3](https://doi.org/10.4171/LEM/62-1/2-3).
- [4] “Twin vector fields and independence of spectra for quadratic vector fields”. *J. Dynam. Control Syst.* **23** (2017), no. 3, 623–633. DOI: [10.1007/s10883-016-9344-5](https://doi.org/10.1007/s10883-016-9344-5).
- [5] “The Woods Hole trace formula and indices for vector fields and foliations on  $\mathbb{C}^2$ ”. [arXiv: 1608.05321v1](https://arxiv.org/abs/1608.05321v1) (2016).
- [6] “Spectra of quadratic vector fields on  $\mathbb{C}^2$ : The missing relation” (with Yury Kudryashov). [arXiv:1705.06340v2](https://arxiv.org/abs/1705.06340v2) (2018).

## Honors & Awards

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### HONORS AND DISTINCTIONS

- 2014 **Eleanor York Award** · For academic achievement and promise · *Department of Mathematics, Cornell University*
- 2013 **Gabino Barrera Medal** · To the top student in the class of 2007–2011 · *Universidad Nacional Autónoma de México*
- 2012 **Sotero Prieto Medal** · To the best undergraduate thesis in mathematics · *Sociedad Matemática Mexicana*
- 2010 **Beca de Excelencia Académica** · Prize awarded for academic merit · *Secretaría de Educación Pública*
- 2009 **Beca de Excelencia Académica** · Prize awarded for academic merit · *Secretaría de Educación Pública*
- 2008 **Beca de Excelencia Académica** · Prize awarded for academic merit · *Secretaría de Educación Pública*
- 2006 **State Youth Award** · Awarded for academic achievement · *State Government of San Luis Potosí*

## Fellowships

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- 2017 – 2019 **PRESTIGE co-Financing Grant Award** · *Campus France and the European Union*
- 2013 – 2017 **Conacyt Fellow (Becario en el Extranjero)** · *Consejo Nacional de Ciencia y Tecnología*
- 2015 – 2017 **Graduate School Fellow** · *Cornell University Graduate School*
- 2013 – 2015 **Beca Complemento SEP** · *DGRI Secretaría de Educación Pública*
- 2012 – 2013 **Cornell Sage Fellowship** · *Department of Mathematics Cornell University*
- 2011 **Beca SIBES de Titulación** · *Secretaría de Educación Pública*
- 2010 – 2011 **Beca Conacyt de Tesista** · *Consejo Nacional de Ciencia y Tecnología*
- 2007 – 2011 **Fundación Telmex Fellow** · *Programa Educativo Fundación Telmex*

## Talks and Presentations

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### IN CONFERENCES AND SCHOOLS

- “An example of a non-algebraizable singularity” (poster)** *Strasbourg, France*  
HOLOMORPHIC FOLIATIONS IN ALSACE  
October 2017
- “There Are No New Index Theorems for Quadratic Vector Fields on  $\mathbb{C}^2$ ” (poster)** *Santander, Spain*  
GEOMETRY OF SINGULARITIES AND DIFFERENTIAL EQUATIONS  
June 2017
- “An example of a non-algebraizable singularity”** *Valladolid, Spain*  
IV ENCUESTO CONJUNTO RSME-SMM  
June 2017
- “Algebraizability of germs holomorphic foliations”** *Cuernavaca, Mexico*  
CIMA SCHOOL ON SINGULARITY THEORY IN TOPOLOGY, GEOMETRY AND FOLIATIONS  
Nov. 2014
- “The Utmost Rigidity Property for Quadratic Foliations on  $\mathbb{CP}^2$ ” (poster)** *Moscow, Russia*  
ATTRACTORS, FOLIATIONS AND LIMIT CYCLES  
Jan. 2014
- “New Rigidity Theorems for Quadratic Vector Fields on  $\mathbb{C}^2$ ”** *Dubná, Russia*  
DYNAMICAL SYSTEMS SUMMER SCHOOL  
Jun. 2013
- “A Survey on Topological Rigidity of Polynomial Foliations”** *Dubná, Russia*  
DYNAMICAL SYSTEMS SUMMER SCHOOL  
Jun. 2013
- “Topological Rigidity of Quadratic Vector Fields”** *Mexico City, Mexico*  
46TH SPRING TOPOLOGY AND DYNAMICS CONFERENCE  
Mar. 2012
- “Rigidez Topológica de Foliaciones Cuadráticas de  $\mathbb{CP}^2$ ”** *San Luis Potosí, Mexico*  
XLIV CONGRESO NACIONAL DE LA SMM  
Oct. 2011
- “Ideal Rigidity of Quadratic Foliations” (poster)** *Guanajuato, Mexico*  
ALGEBRAIC METHODS IN GEOMETRY: COMMUTATIVE AND HOMOLOGICAL ALGEBRA IN FOLIATIONS AND SINGULARITIES  
Sep. 2011

### IN SEMINARS

- “The spectra of singularities of quadratic vector fields”** *Strasbourg, France*  
SÉMINAIRE ANALYSE, IRMA  
May 2018
- “The spectra of singularities of quadratic vector fields”** *Toulouse, France*  
SÉMINAIRE DE SYSTÈMES DYNAMIQUES, IMT  
Apr. 2018

<b>“The spectra of singularities of quadratic vector fields”</b>	<i>Angers, France</i>
SÉMINAIRE DE SYSTÈMES DYNAMIQUES ET GÉOMÉTRIE, LAREMA	<i>Jan. 2018</i>
<b>“The spectra of singularities of quadratic vector fields”</b>	<i>Rennes, France</i>
SÉMINAIRE DE GÉOMÉTRIE ANALYTIQUE, IRMAR	<i>Oct. 2017</i>
<b>“There Are No New Index Theorems for Quadratic Vector Fields on <math>\mathbb{C}^2</math>”</b>	<i>Ithaca NY, USA</i>
DYNAMICAL SYSTEMS SEMINAR, CORNELL UNIVERSITY	<i>May 2017</i>
<b>“Polynomial Vector Fields on <math>\mathbb{C}^2</math> and their Spectra of Singularities”</b>	<i>Stony Brook, USA</i>
DYNAMICAL SYSTEMS SEMINAR, INSTITUTE FOR MATHEMATICAL SCIENCES	<i>Apr. 2017</i>
<b>“Teoremas de Punto Fijo en Variedades”</b>	<i>Mexico City, Mexico</i>
SEMINARIO DE SINGULARIDADES Y FOLIACIONES, INSTITUTO DE MATEMÁTICAS UNAM	<i>Aug. 2016</i>
<b>“On Manifolds and Fixed-Point Theorems”</b>	<i>Ithaca NY, USA</i>
THE OLIVETTI CLUB, CORNELL UNIVERSITY	<i>Apr. 2016</i>
<b>“Clases de Chern en Topología, Geometría y Foliaciones”</b>	<i>Mexico City, Mexico</i>
SEMINARIO DE SINGULARIDADES Y FOLIACIONES, INSTITUTO DE MATEMÁTICAS UNAM	<i>Sep. 2015</i>
<b>“A primer on Characteristic Classes”</b>	<i>Ithaca NY, USA</i>
LETTLE TOPOLOGY SEMINAR, CORNELL UNIVERSITY	<i>Mar. 2015</i>
<b>“The GSV Index for Vector Fields on Singular Varieties”</b>	<i>Ithaca NY, USA</i>
THE OLIVETTI CLUB, CORNELL UNIVERSITY	<i>Mar. 2015</i>
<b>“Algebraizability of Germs of Meromorphic Functions and Foliations on <math>(\mathbb{C}^2, 0)</math>”</b>	<i>Ithaca NY, USA</i>
DYNAMICAL SYSTEMS SEMINAR, CORNELL UNIVERSITY	<i>Sep. 2014</i>
<b>“The Utmost Rigidity Property for Quadratic foliations on <math>\mathbb{CP}^2</math>”</b>	<i>Rennes, France</i>
SÉMINAIRE DE GÉOMÉTRIE ANALYTIQUE, IRMAR	<i>Jun. 2014</i>
<b>“The Utmost Rigidity Property for Quadratic Differential Equations on <math>\mathbb{C}^2</math>”</b>	<i>Ithaca NY, USA</i>
DYNAMICAL SYSTEMS SEMINAR, CORNELL UNIVERSITY	<i>Feb. 2014</i>
<b>“Hilbert’s 16th Problem”</b>	<i>Ithaca NY, USA</i>
THE OLIVETTI CLUB, CORNELL UNIVERSITY	<i>Nov. 2013</i>
<b>“Topological Rigidity for Polynomial Foliations on <math>\mathbb{C}^2</math>”</b>	<i>Ithaca NY, USA</i>
DYNAMICAL SYSTEMS SEMINAR, CORNELL UNIVERSITY	<i>Dec. 2012</i>
<b>“Differential Equations on the Complex Plane”</b>	<i>Ithaca NY, USA</i>
THE OLIVETTI CLUB, CORNELL UNIVERSITY	<i>Oct. 2012</i>
<b>“Rigidez Topológica de Foliaciones Cuadráticas”</b>	<i>Mexico City, Mexico</i>
SEMINARIO DE SINGULARIDADES Y FOLIACIONES, INSTITUTO DE MATEMÁTICAS UNAM	<i>Mar. 2011</i>

## Teaching Experience

<b>Cayuga Correctional Facility</b>	<i>Moravia NY, United States</i>
INSTRUCTOR	<i>Aug. 2016 – Dec. 2016</i>
Fall 2016	Mathematical Explorations
<b>Department of Mathematics, Cornell University</b>	<i>Ithaca NY, United States</i>
TEACHING ASSISTANT	<i>Aug. 2013 – May 2016</i>
Spring 2016	Totally Awesome Mathematics
Fall 2014	Multivariable Calculus for Engineers
Fall 2013	Differential Equations and Dynamical Systems
<b>Facultad de Ciencias, Universidad Nacional Autónoma de México</b>	<i>Mexico City, Mexico</i>
TEACHING ASSISTANT	<i>Aug. 2010 – May 2012</i>
Spring 2012	Ordinary Differential Equations III
Fall 2011	Ordinary Differential Equations II
Spring 2011	Real Analysis II
Fall 2010	Real Analysis I
Fall 2010	Differential Topology I

## Outreach and Volunteer Work

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### Cornell Prison Education Program

*Ithaca NY, United States*

INSTRUCTOR, TUTOR AND CONSULTOR

*Aug. 2015 – May 2017*

- Instructor for the course MATH 1300 “Mathematical Explorations” · Cayuga Correctional Facility · Fall 2016.
- Tutor for the MATH 102 “Introduction to Algebra” course · Auburn Correctional Facility · Fall 2015.
- Member of the Mathematics Committee for the Pedagogy in Prison program.

## Service

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### Department of Mathematics, Cornell University

*Ithaca NY, United States*

ORGANIZATION OF SEMINARS AND EVENTS

2016 – 2017	Organizer of the Dynamical Systems Seminar
2014 – 2015	Co-organizer of the Dynamical Systems Seminar
Spring 2013	Co-organizer of the What Is Seminar
Fall 2012	Co-organizer of the Olivetti Club Seminar

OTHER RESPONSABILITIES

2014 – 2017	Graduate program class representative
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## Languages

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<b>Spanish</b>	Native
<b>English</b>	Fluent
<b>French</b>	Intermediate
<b>Dutch</b>	Basic