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), M.Sc. in Mathematics (January 2015)   *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 areas of complex differential equations and holomorphic foliations. These theories lay right at the intersection 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.

[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.

[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.

[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.

[5] "The Woods Hole trace formula and indices for vector fields and foliations on $\mathbb{C}^2$". arXiv: 1608.05321v1 (2016).

[6] "Spectra of quadratic vector fields on $\mathbb{C}^2$: The missing relation" (with Yury Kudryashov). arXiv:1705.06340v2 (2018).

Honors & Awards

HONORS AND DISTINCTIONS

2014   **Eleanor York Award** · For academic achievement and promise · *Department of Mathematics, Cornell University*

2013   **Gabino Barreda 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

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

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 ENCUENTRO CONJUNTO RSME-SMM   *June 2017*

"Algebraizability of germs holomorphic foliations"   *Cuernavaca, Mexico*

CIMPA SCHOOL ON SINGULARITY THEORY IN TOPOLOGY, GEOMETRY AND FOLIATIONS   *Nov. 2014*

"The Utmost Rigidity Property for Quadratic Foliations on $\mathbb{C}\mathrm{P}^2$" (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 $\mathbb{C}\mathrm{P}^2$"   *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*

"The spectra of singularities of quadratic vector fields" *Angers, France*
SÉMINAIRE DE SYSTÈMES DYNAMIQUES ET GÉOMÉTRIE, LAREMA *Jan. 2018*

"The spectra of singularities of quadratic vector fields" *Rennes, France*
SÉMINAIRE DE GÉOMÉTRIE ANALYTIQUE, IRMAR *Oct. 2017*

"There Are No New Index Theorems for Quadratic Vector Fields on $\mathbb{C}^2$" *Ithaca NY, USA*
DYNAMICAL SYSTEMS SEMINAR, CORNELL UNIVERSITY *May 2017*

"Polynomial Vector Fields on $\mathbb{C}^2$ and their Spectra of Singularities" *Stony Brook, USA*
DYNAMICAL SYSTEMS SEMINAR, INSTITUTE FOR MATHEMATICAL SCIENCES *Apr. 2017*

"Teoremas de Punto Fijo en Variedades" *Mexico City, Mexico*
SEMINARIO DE SINGULARIDADES Y FOLIACIONES, INSTITUTO DE MATEMÁTICAS UNAM *Aug. 2016*

"On Manifolds and Fixed-Point Theorems" *Ithaca NY, USA*
THE OLIVETTI CLUB, CORNELL UNIVERSITY *Apr. 2016*

"Clases de Chern en Topología, Geometría y Foliaciones" *Mexico City, Mexico*
SEMINARIO DE SINGULARIDADES Y FOLIACIONES, INSTITUTO DE MATEMÁTICAS UNAM *Sep. 2015*

"A primer on Characteristic Classes" *Ithaca NY, USA*
LETTLE TOPOLOGY SEMINAR, CORNELL UNIVERSITY *Mar. 2015*

"The GSV Index for Vector Fields on Singular Varieties" *Ithaca NY, USA*
THE OLIVETTI CLUB, CORNELL UNIVERSITY *Mar. 2015*

"Algebraizability of Germs of Meromorphic Functions and Foliations on $(\mathbb{C}^2, 0)$" *Ithaca NY, USA*
DYNAMICAL SYSTEMS SEMINAR, CORNELL UNIVERSITY *Sep. 2014*

"The Utmost Rigidity Property for Quadratic foliations on $\mathbb{CP}^2$" *Rennes, France*
SÉMINAIRE DE GÉOMÉTRIE ANALYTIQUE, IRMAR *Jun. 2014*

"The Utmost Rigidity Property for Quadratic Differential Equations on $\mathbb{C}^2$" *Ithaca NY, USA*
DYNAMICAL SYSTEMS SEMINAR, CORNELL UNIVERSITY *Feb. 2014*

"Hilbert's 16th Problem" *Ithaca NY, USA*
THE OLIVETTI CLUB, CORNELL UNIVERSITY *Nov. 2013*

"Topological Rigidity for Polynomial Foliations on $\mathbb{C}^2$" *Ithaca NY, USA*
DYNAMICAL SYSTEMS SEMINAR, CORNELL UNIVERSITY *Dec. 2012*

"Differential Equations on the Complex Plane" *Ithaca NY, USA*
THE OLIVETTI CLUB, CORNELL UNIVERSITY *Oct. 2012*

"Rigidez Topológica de Foliaciones Cuadráticas" *Mexico City, Mexico*
SEMINARIO DE SINGULARIDADES Y FOLIACIONES, INSTITUTO DE MATEMÁTICAS UNAM *Mar. 2011*

Teaching Experience

Cayuga Correctional Facility *Moravia NY, United States*
INSTRUCTOR *Aug. 2016 – Dec. 2016*

    Fall 2016   Mathematical Explorations

Department of Mathematics, Cornell University *Ithaca NY, United States*
TEACHING ASSISTANT *Aug. 2013 – May 2016*

    Spring 2016   Totally Awesome Mathematics
    Fall 2014   Multivariable Calculus for Engineers
    Fall 2013   Differential Equations and Dynamical Systems

Facultad de Ciencias, Universidad Nacional Autónoma de México *Mexico City, Mexico*
TEACHING ASSISTANT *Aug. 2010 – May 2012*

    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

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

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

Languages

Spanish	Native
English	Fluent
French	Intermediate
Dutch	Basic