Sofia Ortega Castillo

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Academic Positions

CIMAT   Guanajuato, Mexico

Conacyt Postdoctoral Fellow   *Sep. 2017 – present*

Associate Postdoctoral Researcher   *Sep. 2014 – Aug. 2017*

University of Bath   Bath, UK

Visiting Research Fellow   *Sep. 2018 – Dec. 2018*

Education

Texas A&M University   College Station, TX, USA

Ph.D. Mathematics   *Aug. 2008 – Aug. 2014*
Supervisor: William B. Johnson.

Honours and Awards

At University of Bath

UUKi Rutherford Strategic Partner Grant   *UK, 2018*
Awarded by the Department for Business, Energy and Industrial Strategy's Ernest Rutherford Fund.
£4000 Stipend, £800 Travel Grant.

At CIMAT

National System of Investigators Member   *Mexico, 2017 – present*
Admission to the National System of Investigators (SNI), level 1.
MX$14500 Monthly Stipend.

IMU/CWM Supplementary Grant   *Spain, 2017*
Awarded by the Committee for Women in Mathematics of the International Mathematical Union.
€500 Travel Grant.

Publications

5) S. Ortega Castillo, A. Prieto, **The polynomial cluster value problem**, J. Math. Anal. Appl. 461 (2018), no. 2, 1459-1470.

4) S. Ortega Castillo, **Cluster value problem in infinite-dimensional spaces**. *Mexican mathematicians abroad: recent contributions*, 165-178, Contemp. Math. 657, Amer. Math. Soc., Providence, RI (2016).

3) W. B. Johnson, S. Ortega Castillo, **The cluster value problem in spaces of continuous functions**, Proc. Amer. Math. Soc. 143 (2015), no. 4, 1559-1568.

2) W. B. Johnson, S. Ortega Castillo, **The cluster value problem for Banach spaces**, Illinois J. Math. 58 (2014), no. 2, 405-412.

1) Yu. N. Gartstein, T. D. Bustamante and S. Ortega Castillo. **Polarons and excitons on a cilynder: A simplified model for nanotubes in polar environments** J. Phys.: Condens. Matter 19 156210 (12pp).

Research interests

- **Functional analysis**: geometry of Banach spaces, Banach and uniform algebras, geometric measure theory, operator theory and C^*-algebras, spectral theory and applications to physics.

- **Higher dimensional complex analysis**: Finite and infinite-dimensional holomorphy, boundary behavior of analytic functions, complex differential geometry, partial differential equations in several complex variables.

Reviews

Noncoherent Uniform Algebras in $\mathbb{C}^n$ *USA, 2017*
MathSciNet Mathematical Reviews.

$\mathcal{I}$-bounded holomorphic functions *USA, 2016*
MathSciNet Mathematical Reviews.

Uniformly non-square Banach spaces have the fixed point property *Mexico, 2008*
Memoirs of the Second Latin-American Workshop of Mathematics Students.

CONFERENCE TALKS:

Strong pseudoconvexity in Banach spaces *Levico Terme, Italy, October 2018*
Complex Approximation and Bounded Holomorphic Functions.

Boundary values of bounded holomorphic functions on domains in $\mathbb{C}^n$ *Dublin, Ireland, June 2018*
International Conference on Complex Analysis, Potential Theory and Applications.

Analytic-geometric phenomena in several complex variables *Mexico city, MX, October 2017*
50th National Congress of the Mexican Mathematical Society.

Strong pseudoconvexity and Cauchy-Riemann equations *Montréal, Canada, July 2017*
Mathematical Congress of the Americas 2017.

Strong pseudoconvexity in Banach spaces *Atlanta, GA, USA, January 2017*
2017 AMS/MAA Joint Mathematics Meetings.

The polynomial cluster value problem *Aguascalientes, Ags, MX, October 2016*
XLIX National Congress of the Mexican Mathematical Society.

The polynomial cluster value problem *Bedlewo, Poland, July 2016*
Transfinite methods in Banach spaces and algebras of operators.

Strong pseudoconvexity in Banach spaces *Coventry, UK, June 2015*
Relations between Banach Space Theory and Geometric Measure Theory.

The cluster value problem for infinite-dimensional spaces *Albacete, Spain, June 2014*
Geometry of Banach Spaces, A conference in honour of Stanimir Troyansky.

The cluster value problem for infinite-dimensional spaces *Edwardsville, IL, USA, May 2014*
Seventh Conference on Function Spaces.

Corona and cluster value problems in infinite-dimensional spaces *Kent, OH, USA, April 2014*
Informal Analysis Seminar, Universality Weekend.

The cluster value problem in spaces of continuous functions *Oxford, MS, USA, March 2013*
AMS Spring Southeastern Sectional Meeting.

The cluster value problem in spaces of continuous functions *Guanajuato, Gto, MX, Aug. 2012*
First Workshop Matemáticos Mexicanos Jóvenes en el Mundo.

The cluster value problem in spaces of continuous functions *College Station, TX, USA, July 2012*
Workshop in Analysis and Probability.

SEMINAR TALKS:

Holomorphy in several variables *Bath, UK, November 2018*
Postgraduate Seminar Series of the University of Bath.

Strong pseudoconvexity in Banach spaces *Lancaster, UK, November 2018*
Pure Math Seminar of Lancaster University.

Strong pseudoconvexity in Banach spaces *Bath, UK, October 2018*
  Analysis Seminar of the University of Bath.

Strong pseudoconvexity in Banach spaces *Newcastle, UK, October 2018*
  Functional Analysis Seminar of Newcastle University.

Strong pseudoconvexity in Banach spaces *Bristol, UK, October 2018*
  Analysis and Geometry Seminar of the University of Bristol.

Valores a la frontera de funciones holo-
morfas acotadas sobre dominios en $\mathbb{C}^n$ *Mérida, Yuc, MX, May 2018*
  Coloquio conjunto FMAT-CIMAT.

Valores a la frontera de funciones holomorfas
a través de las ecuaciones de Cauchy-Riemann *Colima, Col, MX, April 2018*
  Seminario de la Facultad de Ciencias de la Universidad de Colima.

Valores a la frontera de funciones holomorfas
a través de las ecuaciones de Cauchy-Riemann *Guadalajara, Jal, MX, April 2018*
  Seminario de Investigación de Física y Matemáticas de la Universidad de Guadalajara.

Obstrucciones a continuación holomorfa en dimensión alta *Guanajuato, Gto, MX, October 2017*
  Seminario Junior de Estudiantes de la Universidad de Guanajuato.

Problema polinomial de puntos de adherencia *Madrid, Spain, June 2017*
  Coloquio de la Facultad de Matemáticas de la Universidad Complutense de Madrid.

Problemas de mapas, y soluciones con gráficas o análisis *Tuxtla Gutiérrez, Chis, MX, May 2017*
  Seminario de la Fac. de C. en Fís. y Mat. de la Universidad Autónoma de Chiapas.

Connectedness everywhere *Richmond, VA, USA, February 2017*
  Colloquium of the Math/CS Dept. of the University of Richmond.

Strong pseudoconvexity in Banach spaces and applications *Bangalore, India, February 2016*
  Math. Dept. Seminar of the Indian Institute of Science.

Nociones de pseudoconvexidad en espacios de Banach *Madrid, Spain, June 2015*
  Coloquio de la Facultad de Matemáticas de la Universidad Complutense de Madrid.

Pseudoconvexidad fuerte en espacios de Banach *Guanajuato, Gto, MX, November 2014*
  Coloquio del Centro de Investigación en Matemáticas A. C.

Strong pseudoconvexity in Banach spaces *College Station, TX, USA, October 2014*
  Texas A&M Banach Spaces Seminar.

The cluster value problem for Banach spaces *Atlanta, GA, USA, November 2013*
  Georgia Tech Analysis Seminar.

The cluster value problem for Banach spaces *College Station, TX, USA, October 2013*
  Texas A&M Banach Spaces Seminar.

The cluster value problem in spaces of continuous functions *College Station, TX, USA, January 2013*
  Texas A&M Graduate Student Organization Seminar.

Martingales and concentration in random graphs *College Station, TX, USA, April 2010*
  Texas A& M Graduate Student Organization Seminar.

Posters

Strong pseudoconvexity in Banach spaces *Los Angeles, CA, USA, April 2017*
  2017 AWM Research Symposium at UCLA.

Corona and cluster value problems in infinite-dimensional spaces *Baltimore, MD, USA, January 2014*
  2014 AMS/MAA Joint Mathematics Meetings.

The cluster value problem in spaces of continuous functions *San Diego, CA, USA, January 2013*
  2013 AMS/MAA Joint Mathematics Meetings.

Minicourses

PRESENTED AT UNAM

Domains of holomorphy: examples and properties *Mexico city, MX, Jul.-Aug. 2018*
  Minicourse of the Second School of Mathematical Analysis.

Informal Seminars

Organized at CIMAT

Differential equations in complex variables *Guanajuato, Gto, MX, Spring – Summer 2018*
Domains of holomorphy, Hartogs' domain, (strong) pseudoconvexity, (strong) plurisubharmonicity,
Cauchy-Riemann equations.

Supervision

Graduate Students

Fabián José Trejo Mayorquín *CIMAT, Spring – Fall 2018*
The spectrum of H^∞ for domains in one complex variable.

Teaching Experience

Graduate courses

Thesis Seminar *CIMAT, Spring 2018*
Banach spaces and algebras, spectral theory, Cauchy-Riemann equations, Riemann surfaces.

Topics of Functional Analysis *CIMAT, Spring 2018*
Bases and basic sequences, classical sequence spaces, special types of bases.

Complex Analysis in Several Variables *CIMAT, Fall 2017*
Power series, holomorphic functions, and complex geometry.

Analysis II (Measure Theory) *CIMAT, Spring 2016*
Measures, integration, signed measures and differentiation.

C*-Algebras *CIMAT, Fall 2015*
Spectral theory, C*-Algebras, Gelfand-Naimark representation.

Analysis II (Measure Theory) *CIMAT, Spring 2015*
Measures, integration, signed measures and differentiation.

Undergraduate courses

Topics of Contemporary Mathematics II *Texas A&M University, Spring 2012*
Logic, sets, counting principles, probability, matrices, and applications.

Administrative Responsibilities

At CIMAT

Evaluation committee member *Spring 2018*
Analysis qualifier examination of the masters program at CIMAT.

Evaluation committee leader *Spring 2017*
Analysis qualifier examination of the masters program at CIMAT.

Evaluation committee leader *Summer 2016*
Analysis qualifier examination of the masters program at CIMAT.

Evaluation committee member *Summer 2015*
Analysis qualifier examination of the masters program at CIMAT.

Evaluation committee member *Summer 2015*
Complex Variable qualifier examination of the masters program at CIMAT.

Academic responsible of the Mexican Mathematical Olympiad in Guanajuato. *2015*
Broadcasting, having workshops and examinations, selecting materials, training, and reporting.

Outreach Activities

At CIMAT

Conexidad en Todas Partes *Guanajuato, Gto, MX, February 2017*
Mathematics and Computer Science talk delivered to visiting high school students.

Deputy Leader of the Mexican Mathematical Olympiad in Guanajuato. *Guanajuato, Gto, MX, 2016*
Broadcasting, having workshops and examinations, selecting materials, training, and reporting.