

María Isabel HERRERO

Personal Information

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Born: October 15, 1981;
Buenos Aires, Argentina

Citizenship: Argentina

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Research Interests

Computational Algebra, Tropical Geometry.

Education

- 2007-2013 **Ph.D., Mathematical Sciences, University of Buenos Aires**, Argentina, April 29, 2013. Advisor: Gabriela Jeronimo.
Sistemas de Ecuaciones Polinomiales Ralas: Aspectos Teóricos y Algoritmos [Sparse polynomial equation systems: theoretical aspects and algorithms] (in Spanish).
<http://cms.dm.uba.ar/academico/carreras/doctorado/2013/tesisHerrero.pdf>
- 2000-2007 **Licenciatura, Mathematical Sciences, University of Buenos Aires**, Argentina, March 26, 2007. Advisor: Juan Sabia.
Sobre la cantidad de soluciones de sistemas de ecuaciones polinomiales ralas [On the number of solutions of systems of sparse polynomial equations] (in Spanish).
<http://cms.dm.uba.ar/academico/carreras/licenciatura/tesis/herrero.pdf>

Professional Experience

Research experience

- 2016 - 2023 **Researcher at CONICET**, Argentina.
- 2014 - 2016 **Postdoctoral Fellowship, CONICET** - Argentina.
Research subject: *Sparse polynomial systems and singular variety tropicalization*.
Advisors: Alicia Dickenstein, Gabriela Jeronimo.
- 2014 **Postdoctoral Fellowship, Simons Institute for the theory of computing, Berkeley University** - California, USA. Program: *Algorithms and Complexity in Algebraic Geometry*, from August 21th to December 19th, 2014.
- 2007 - 2012 **Doctoral Fellowship, CONICET**, Argentina.
Research subject: *Sparse polynomial equation systems: theoretical aspects and algorithms*. Advisors: Gabriela Jeronimo, Juan Sabia.

2006 - 2007 **Undergraduate student Fellowship, Universidad de Buenos Aires, Beca Estímulo** - Argentina.
Research subject: *Bernstein's theorem and applications*. Advisor: Juan Sabia.

Teaching Experience

- 2021 - now **Invited Professor**, Department of Mathematics and Statistics, **Universidad Torcuato Di Tella**, Argentina.
- 2012 - now **Jefe de Trabajos Prácticos** (Senior graduate teaching assistant), Department of Mathematics, FCEN, **Universidad de Buenos Aires**, Argentina.
- 2017 - 2018 **Professor**, Faculty of Engineering and Agricultural Sciences, **Pontificia Universidad Católica Argentina**, Argentina (Class taught only the first semester).
- 2005 - 2012 **Ayudante de Primera o Segunda** (teaching assistant), Department of Mathematics, FCEN, **Universidad de Buenos Aires**, Argentina.
- 2006 **Ayudante de Segunda** (undergraduate teaching assistant), Department of Mathematics, CBC, **Universidad de Buenos Aires**, Argentina.

Publications

- A. Dickenstein, M. I. Herrero, B. Mourrain *Curve valuations and mixed volumes in the implicitization of rational varieties*. Journal of Algebra 612 (2022), pp. 691–721.
- M. I. Herrero, G. Jeronimo, J. Sabia: *On degree bounds for the sparse Nullstellensatz*. Journal of Algebra 534 (2019), pp. 531–544.
- M. I. Herrero, G. Jeronimo, J. Sabia: *On the multiplicity of isolated roots of sparse polynomial systems*. Discrete & Computational Geometry 62 (2019), pp. 788–812.
- A. Dickenstein, M. I. Herrero, L. Tabera: *Arithmetics and combinatorics of tropical Severi varieties of univariate polynomials*. Israel J. Math 221 (2017), pp. 741–777.
- M. I. Herrero, G. Jeronimo, J. Sabia: *Puiseux expansions and non-isolated points in algebraic varieties*. Communications in Algebra 44 (2016), no. 5, pp. 2100–2109.
- M. I. Herrero, G. Jeronimo, J. Sabia: *Elimination for generic sparse polynomial systems*. Discrete & Computational Geometry 51 (2014), no. 3, pp. 578–599.
- M. I. Herrero, G. Jeronimo, J. Sabia: *Affine solution sets of sparse polynomial systems*. Journal of Symbolic Computation 51 (2013), pp. 34–54.
- M. I. Herrero, G. Jeronimo, J. Sabia: *Computing isolated roots of sparse polynomial systems in affine space*. Theoretical Computer Science 411 (2010), pp. 3894–3904.