Diana Carolina Montoya

Institute of Discrete Mathematics and Geometry.
Technische Universität Wien

Humboldtgasse 28/5
1100 Wien, Österreich
☎ +43-660-5078020
✉ dcmontoyaa@gmail.com
https://dcmontoya.github.io

Personal data

Born	November 18, 1985. Arauca, Colombia.
Citizenship	Colombian.
Visa Status	Permanent Residency- Austria.
ORCID	0000-0002-2918-1672

Main areas of research

My research focuses on mathematical logic, specifically *set theory*. I am interested in studying and understanding the possible sizes of different subsets of the reals and their analogs to uncountable (even large) cardinals.

Education

2013–2017 **Doctorate in Natural Sciences – Mathematics**, *Universität Wien*, Vienna, Austria.
Graduation with distinction.
Dissertation: On some cardinal invariants of the generalized Baire spaces.
Advisor: Sy-David Friedman.

2008–2010 **Magister in Mathematics**, *Universidad de los Andes*, Bogotá, Colombia.
Qualifying exam in mathematical logic.
Master Thesis: Forcing notions presented as quotients.
Advisor: Jörg Brendle. Co-advisor: Ramiro de La Vega Sinisterra.

2003–2008 **Mathematics**, *Universidad Nacional de Colombia*, Bogotá, Colombia.
With advanced courses in algebra and logic.
Undergraduate Thesis: Definable versions on combinatorial set theory.
Advisor: Andrés Villaveces Niño.

Employment

Since March 2023 **FWF Hertha Firnberg fellow**, *Project T-1100*, Technische Universität Wien.

2022-2023 **FWF Hertha Firnberg fellow**, *Project T-1100*, Universität Wien.

2021–2022 **Maternity leave**.

2020–2021 **FWF Hertha Firnberg fellow**, *Project T-1100*, Universität Wien.

2019–2020 **Maternity leave**.

2018–2019 **FWF postdoctoral fellow**, *Universität Wien*, Mentor: Vera Fischer.

2017–2018 **FWF postdoctoral fellow**, *Universität Wien*, Mentor: Sy-David Friedman.

2017 **FWF postdoctoral fellow**, *Universität Wien*, Mentor: Lyubomyr Zdomskyy.

Peer-reviewed publications

1. **Higher Independence**, *With Vera Fischer*, Accepted in the Journal of Symbolic Logic, 1-24. DOI:10.1017/jsl.2022.33, 2022.

2. **Towers and gaps at uncountable cardinals**, *With Vera Fischer, Dániel Soukup and Jonathan Schilhan*, Fundamenta Mathematicae, DOI: 10.4064/fm109-9-2021, 2022.

3. **Ideals of independence**, *With Vera Fischer*, Archive for Mathematical Logic. Volume 58, pages 767-785, DOI: 10.1007/s00153-019-00669-8, 2019.

4. **Cichoń's Diagram for uncountable cardinals**, *With Jörg Brendle, Andrew Brooke-Taylor and Sy-David Friedman*, Israel Journal of Mathematics 225(2), 959-1010. DOI:10.1007/s11856-018-1688-y, 2018.

5. **Coherent systems of finite support iterations**, *With Vera Fischer, Sy-David Friedman and Diego Mejía*, Journal of Symbolic Logic 83(1), 208-236, DOI: 10.1017/jsl.2017.20, 2018.

6. **Cardinal characteristics at κ in a small $\mathfrak{u}(\kappa)$ model**, *With Andrew Brooke-Taylor, Vera Fischer and Sy-David Friedman*, Annals of Pure and Applied Logic. Volume 168, Issue 1, Pages 37-49, DOI: 10.1016/j.apal.2016.08.004, 2017.

7. **A base-matrix lemma for sets of rationals modulo nowhere dense sets**, *With Jörg Brendle*, Archive for Mathematical Logic. Volume 51, Issue 3, Pages 305-317, DOI:10.1007/s00153-012-0274-y , 2012.

Recent submissions, preprints and ongoing projects

1. **Maximal independence and singular cardinals**, *Submitted*, 2023.
2. **Maximal almost disjoint families at singular cardinals**, *Submitted*, 2022.

Invited conference talks

September 2023	**(Upcoming)**, *Minisymposium in Set Theory at the upcoming ÖMG Annual Conference*, Graz, Austria.
June 2023	**(Upcoming)**, *Special session on Set Theory and its Applications at the 2023 CMS Summer Meeting*, Ottawa, Canada.
May 2023	**(Upcoming)**, *Thematic Program on Set Theoretic Methods in Algebra, Dynamics and Geometry*, Toronto, Canada.
February 2023	**Maximal independence and singulars**, *Arctic Set Theory Workshop VI*, Kilpisjärvi, Finland.
July 2022	**Maximal almost disjointness and singulars**, *XIX Simposio Latinoamericano de Lógica Matemática -Section on Set Theory*, San Jose, Costa Rica.
June 2022	**Independence and singular cardinals**, *Logic Colloquium 2022- Section on Set Theory*, Reykjavik, Iceland.
March 2022	**Infinite combinatorics on the real line**, *Día Internacional de las Matemáticas*, Universidad ECCI / Bogotá, Zoom.
December 2021	**Independent families in set theory**, *Plenary talk at the 1er encuentro de Lógica Brasil-Colombia*, Zoom.
November 2019	**The inequality $\mathfrak{p} = \mathfrak{t}$ and the generalized characteristics**, *DiPrisco Fest*, Bogotá, Colombia.
September 2018	**Combinatorics on the space of generalized reals**, *European women in mathematics. Mini-Symposium of mathematical logic*, Graz, Austria.
August 2018	**Some inequalities between cardinal invariants**, *KNAW Academy colloquium on generalised Baire spaces*, Amsterdam, The Netherlands.
June 2018	**Cardinal invariants and the generalized Baire spaces**, *11th Young set theory workshop*, Lausanne, Switzerland.

Invited Seminar Talks

April 2023	**Cardinal characteristics for uncountable cardinals**, *Seminario Colombo-Mexicano de Teoría de Conjuntos*, Zoom.
March 2023	**Combinatorics of the reals and independence results.**, *Algebra and Discrete Mathematics Seminar at the Johannes Kepler University in Linz*, Linz, Austria.
May 2022	**Higher independence at regular cardinals**, *Leeds university Models and Sets seminar series*, Zoom.
June 2021	**Independence at uncountable cardinals**, *Münster set theory seminar*, Zoom.
November 2020	**Independence and uncountable cardinals**, *CUNY set theory seminar*, Zoom.

Contributed talks

2022 **Independent families and singulars**, *Set Theory seminar at the KGRC*, Vienna, Austria.

2022 **Some remarks on independent families**, *Second Austrian Day of women in mathematics*, Zoom.

2021 **Independent families and singular cardinals**, *Research Seminar at the KGRC*, Zoom.

2019 **The equality $\mathfrak{p} = \mathfrak{t}$ and the generalized characteristics**, *Research Seminar at the KGRC*, Vienna, Austria.

2018 **On some ideals associated with independent families**, *Research Seminar at the KGRC*, Vienna, Austria.

2017 **The ultrafilter number on κ**, *CUNY Set Theory seminar*, New York, USA.

2017 **Cichoń's diagram for uncountable cardinals**, *Logic seminar at Rutgers University*, New Brunswick, USA.

2016 **The ultrafilter number on κ**, *Workshop on generalized Baire spaces*, Bonn, Germany.

2016 **Coherent systems of finite support iterations**, *RIMS Workshop on infinite Combinatorics and forcing theory*, Kyoto, Japan.

2015 **On Cichoń's diagram for uncountable κ**, *Hamburg workshop on set theory. Generalized Baire spaces.*, Hamburg, Germany.

2015 **Some cardinal invariants of the generalized Baire spaces**, *PhDs in Logic VII*, Vienna, Austria.

2012 **Forcing notions presented as quotients**, *15th Latin American symposium on mathematical logic*, Bogotá, Colombia.

Awards and Distinctions

2020-2023 **FWF Hertha Firnberg Fellowship**, Vienna, Austria.
Project Title: Singular cardinals and cardinal characteristics.

2009-2011 **Mazda foundation for arts and sciences scholarship**, Bogotá, Colombia.
Recognition given to outstanding students of mathematics, theoretical physics and music.

2008-2010 **Universidad de los Andes**, Bogotá, Colombia.
Master scholarship

2008 **Universidad Nacional de Colombia**, Bogotá, Colombia.
Best undergraduate thesis from the mathematics department
Work chosen to represent the university in the national contest of best thesis "Otto de Greiff".

Academic service

2023 **Sixth workshop on generalised Baire spaces**, *Organizer*, Vienna, Austria.

2022 **Panel de mujeres SLALM // Women's panel at the IX Latin American Symposium on Mathematical Logic**, *Organizer/Participant*, San José, Costa Rica.

2019 **Advanced class in set theory**, *Local organizer*, Vienna, Austria.

2018 **Set theory today: A conference in honor of Georg Cantor**, *Local organizer*, Vienna, Austria.

Since 2023 **Annals of Pure and Applied Logic**, *Reviewer*.

Since 2021 **Archive for mathematical Logic**, *Reviewer*.

Since 2019 **Journal of Symbolic Logic**, *Reviewer*.

Since 2018 **Mathematical Reviews**, *Reviewer*.

Since 2016 **Miscellanea Logica XI**, *Referee*.

Academic Memberships

Österreichische Mathematische Gesellschaft

European Set Theory Society

European women of mathematics

Sociedad colombiana de matemáticas