

Dr. Marcel Padilla | Curriculum Vitae

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Academic Positions

Postdoc <i>Interactive Geometry Lab, geometric fluids in computer graphics.</i>	ETH Zürich Oct 2024 – Current
Postdoc <i>Institute of Mathematics, applying differential geometry in computer graphics.</i>	TU Berlin Sep 2023 – Jul 2024
Doctoral researcher <i>Supervisors: Peter Schröder (Caltech) & Ulrich Pinkall (TU Berlin)</i>	Caltech & TU Berlin May 2018 – Sep 2023
Student Assistant <i>Code development, Tutoring and Tutorials</i>	TU Berlin Dec 2014 – Jul 2017

Education

PhD in Mathematics <i>Thesis title: "The Solar Corona: Modeled, Discretized, Visualized"</i>	Caltech & TU Berlin May 2018 – Sep 2023
MSc in Mathematics <i>Thesis title: "Point Vortex Dynamics on Closed Surfaces"</i>	TU Berlin Jun 2016 – May 2018
BSc in Mathematics <i>Thesis title: "Zeros of Random Sections on Line Bundles"</i>	TU Berlin Oct 2012 – Jun 2016

Funding, Association Memberships and Awards

Research position at ETH Zürich <i>Feodor-Lynen Fellowship of the Alexander von Humboldt Foundation and ETH employee</i>	Oct 2024 – Current
Research position at TU Berlin <i>Funded by "SFB Transregio 109 Discretization in Geometry and Dynamics"</i>	Mar 2021 – Jul 2024
Berlin Mathematical School and Math+ <i>PhD Phase II student membership</i>	May 2018 – Sep 2023
PhD scholarship <i>Funded through a Einstein foundation visiting fellowship</i>	May 2018 – Feb 2021
German Academic Scholarship Foundation <i>Student scholarship, Studienstiftung des Deutschen Volkes, now alumni</i>	Mar 2016 – May 2018
KAUST internship initiative <i>Host funded internship at the Visual Computing Center</i>	Feb – Apr 2018
Overseas exchange scholarship from the TU Berlin <i>For an exchange to Sophia University in Tokyo, Japan</i>	Sep 2017 – Feb 2018

DAAD rise worldwide scholarships

Funding for internships at Institutes in Estonia, India, and Australia (more details below) 2014, 2015, & 2016

Erasmus exchange scholarship from the EU

For an exchange to Durham University, United Kingdom

Sep 2013 – Jul 2014

German Mathematician Union (DMV)

Abitur Award, for excellent performances in mathematics

Jun 2012

Hans Riegel Foundation alumni

Award, for a mathematical submission as an Abitur exam

Jun 2012

Jugend Forscht

Young researchers competition award in Berlin

Feb 2011

Publications

◦ **NEW: Goin With the Flow, SIGGRAPH 2024**

Yousuf Soliman, Marcel Padilla, Oliver Gross, Felix Knöppel, Ulrich Pinkall, Peter Schröder. ACM Transactions on Graphics, Vol. 43, No. 4, [10.1145/3658164](https://doi.org/10.1145/3658164)

◦ **The solar corona: modeled, discretized, visualized, PhD Thesis**

Marcel Padilla, Defended on 25th September 2023, [10.14279/depositonce-18889](https://doi.org/10.14279/depositonce-18889)

◦ **Motion From Shape Change, SIGGRAPH 2023**

Oliver Gross, Yousuf Soliman, Marcel Padilla, Felix Knöppel, Ulrich Pinkall, Peter Schröder. ACM Transactions on Graphics, Vol. 42, No. 4, [10.1145/3592417](https://doi.org/10.1145/3592417)

◦ **4D Atlas: Statistical Analysis of the Spatiotemporal Variability in Longitudinal 3D Shape Data, IEEE Transactions on Pattern Analysis and Machine Intelligence**

Hamid Laga, Marcel Padilla, Ian H. Jermyn, Sebastian Kurtek, Mohammed Bennamoun, Anuj Srivastava. vol. 45, no. 2, pp. 1335-1352, 1 Feb. 2023, [10.1109/TPAMI.2022.3163720](https://doi.org/10.1109/TPAMI.2022.3163720)

◦ **Filament Based Plasma, SIGGRAPH 2022**

Marcel Padilla, Oliver Gross, Felix Knöppel, Albert Chern, Ulrich Pinkall, Peter Schröder. ACM Transactions on Graphics, Vol. 41, No. 4, Art. 153, [10.1145/3528223.3530102](https://doi.org/10.1145/3528223.3530102)

◦ **On Bubble Rings and Ink Chandeliers, SIGGRAPH 2019**

Marcel Padilla, Albert Chern, Felix Knöppel, Ulrich Pinkall, Peter Schröder. ACM Transactions on Graphics, Vol. 38, No. 4, Art. 129, [10.1145/3306346.3322962](https://doi.org/10.1145/3306346.3322962)

◦ **The Nearest Hermitian Inverse Eigenvalue Problem Solution with Respect to the 2-Norm**

Marcel Padilla, Benedikt Kolbe, Aniruddha Chakraborty (2017). [arXiv:1703.00829](https://arxiv.org/abs/1703.00829)

◦ **A.C.T.I.V.E.: A Scalable Superellipsoid-based CFD Visualization for Virtual and Desktop Environments, EuroVR 2014**

Heiko Herrmann, Marcel Padilla, and Emiliano Pastorelli (2014). The Eurographics Association. [10.2312/eurovr.20141344](https://doi.org/10.2312/eurovr.20141344)

◦ **Eine Neue Visualisierung komplexer Funktionen, Junge Wissenschaft**

Marcel Padilla. Youth research magazine [issue Nr. 94](#), 2012

Experiences

Visiting Researcher.....

California Institute of Technology

Department of Mathematics

Research visit. Supervisor: Peter Schröder

Pasadena, United States

Jul-Sep 2019

Leicester University <i>Department of Mathematics</i> Implementing minimal and cmc surfaces. Supervisor: Katrin Leschke	Leicester, United Kingdom <i>Jan 2019</i>
King Abdullah University of Science and Technology <i>KAUST internship program</i> Wood fracture dynamics. Supervisor: Dominik L. Michels	Thuwal, Saudi Arabia <i>Feb 2018 – Apr 2018</i>
Murdoch University <i>DAAD rise worldwide scholarship</i> Machine learning on 4D shape analysis. Supervisor: Hamid Laga	Perth, Australia <i>Aug 2016 – Oct 2016</i>
Indian Institute of Technology Mandi <i>DAAD rise worldwide scholarship</i> Numerical methods for inverse eigenvalue problems. Supervisor: Aniruddha Chakraborty	Mandi, India <i>Aug 2015 – Oct 2015</i>
Tallinn University of Technology <i>DAAD rise worldwide scholarship</i> Tensor field visualization in VR. Supervisor: Heiko Herrmann	Tallinn, Estonia <i>Jul 2014 – Sep 2014</i>

Teaching.....

Student Mentoring <i>Various Topics, TU Berlin</i>	Berlin, Germany <i>Winter 2018 - 2024</i>
The Art of Presenting <i>Workshop on presentations in academia at BMS/Math+, TU Berlin</i>	Berlin, Germany <i>Winter 2019 & 2020</i>
Geometry Processing and Applications <i>Tutorials and several lectures, TU Berlin</i>	Berlin, Germany <i>Winter 2019/2020</i>
Houdini Tutorials Tailored for Mathematicians <i>Online tutorials and course guide, TU Berlin</i>	Berlin, Germany <i>2016 - Current</i>
Mahtematik für Physiker I <i>Tutor classes, TU Berlin</i>	Berlin, Germany <i>Winter 2015/2016</i>
Teaching Assistant <i>Volunteer, Multicultural Youth and Integration Center "mji e.V."</i>	Berlin, Germany <i>2012 – 2015</i>

Study Exchange.....

Sophia Univeristy <i>Overseas exchange scholarship from the TU Berlin</i>	Tokyo, Japan <i>Sep 2017 – Feb 2018</i>
Durham Univeristy <i>Erasmus exchange scholarship from the EU</i>	Durham, United Kingdom <i>Sep 2013 – Jul 2014</i>

Conference Presentations & Talks

- IGL Seminar at ETH Zürich 2023. *Filament Based Plasma*.
- SFB Transregio 109 DGD days 2022 in Magdeburg. *Filament Based Plasma*.
- ACM SIGGRAPH 2022. *Filament Based Plasma*. [View on Youtube](#)
- SFB Transregio 109 DGD days 2021 in Landshut. *Filament Based Plasma: Discrete Magnetohydrodynamics*.
- 8th BMS student conference 2020. *On Bubble Rings and Ink Chandeliers*.
- ACM SIGGRAPH 2019. *On Bubble Rings and Ink Chandeliers*. [View on Youtube](#).
- 7th BMS student conference 2019. *Simulating Hurricanes on Bunnies, Point Vortex Dynamics on Closed Surfaces*.

- o EuroVR 2014, The Eurographics Association. *A.C.T.I.V.E. A Scalable Superellipsoid-based CFD Visualization for Virtual and Desktop Environments.*

Technical and Personal Skills

Languages.....

English: *excellent command*

German: *native, German nationality*

Spanish: *native, Mexican nationality*

Italian: *intermediate*

French: *intermediate*

Japanese: *beginner*

Arabic: *beginner*

Programming Languages and Software.....

Main computation tools: *Python, Houdini VEX*

Experienced: *C++, java, javascript, html, css, MATLAB*

Volunteering.....

Foodsharing association

Saving and distributing surplus food

Berlin, Germany

2019 – current

Arbeiter-Samariter-Bund

Kitchen staff, refugee emergency housing (Rathaus Wilmersdorf)

Berlin, Germany

2015 – 2017

St. John Ambulance Society

First aid response team

Durham, UK

2013 – 2014

Multicultural Youth and Integration Center “mji e.V.”

Volunteer, Homework helper

Berlin, Germany

2012 – 2015