

Dr. Marcel Padilla | Curriculum Vitae

Technical University of Berlin, Institute for Mathematics, Str. des 17. Juni 136
Sekt. MA 8–3 (MA823) - 10623 Berlin, Germany

✉ padilla@math.tu-berlin.de • 🌐 marcelpadilla.com • November, 2023

Academic Positions

Researcher <i>Institute of Mathematics, applying differential geometry in computer graphics.</i>	TU Berlin 2023 – Current
Doctoral researcher <i>Supervisors: Peter Schröder (Caltech) & Ulrich Pinkall (TU Berlin)</i>	Caltech & TU Berlin 2018 – 2023
Student Assistant <i>Code development and making Tutorials for the academic usage of the software Houdini.</i>	TU Berlin 2014 – 2017

Education

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

Funding, Association Memberships and Awards

Research position at TU Berlin <i>Funden by "SFB Transregio 109 Discretization in Geometry and Dynamics"</i>	2021 - Current
Berlin Mathematical School and Math+ <i>PhD Phase II student membership</i>	2018 - 2023
PhD scholarship <i>Funded through a Einstein foundation visiting fellowship</i>	2018 - 2021
German Academic Scholarship Foundation <i>Student scholarship, Studienstiftung des Deutschen Volkes, now alumni</i>	2016 - 2018
KAUST internship initiative <i>Host funded internship at the Visual Computing Center</i>	2018
Overseas exchange scholarship from the TU Berlin <i>For an exchange to Sophia University in Tokyo, Japan</i>	2017-2018
DAAD rise worldwide scholarships <i>Funding for internships at Institutes in Estonia, India, and Australia</i>	2014, 2015, & 2016
Erasmus exchange scholarship from the EU <i>For an exchange to Durham University, United Kingdom</i>	2013-2014

German Mathematician Union (DMV) <i>Abitur Award, for excellent performances in mathematics</i>	2012
Hans Riegel Foundation alumni <i>Award, for a mathematical submission as an Abitur exam</i>	2012
Jugend Forscht <i>Young researchers competition award in Berlin</i>	2011

Publications

- **NEW: 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)
- **NEW: 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)
- **NEW: 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 <i>Department of Mathematics</i> Research visit. Supervisor: Peter Schröder	Pasadena, United States <i>Jul-Sep 2019</i>
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*DAAD rise worldwide scholarship*

Machine learning on 4D shape analysis. Supervisor: Hamid Laga

Perth, Australia*Aug 2016 – Oct 2016***Indian Institute of Technology Mandi***DAAD rise worldwide scholarship*

Numerical methods for inverse eigenvalue problems. Supervisor: Aniruddha Chakraborty

Mandi, India*Aug 2015 – Oct 2015***Institute of Cybernetics***DAAD rise worldwide scholarship*

Tensor field visualization in VR. Supervisor: Heiko Herrmann

Tallinn, Estonia*Jul 2014 – Sep 2014***Teaching**.....**The Art of Presenting***Workshop on presentations in academia at BMS/Math+, TU Berlin***Berlin, Germany***Winter 2019 & 2020***Geometry Processing and Applications***Tutorials and several lectures, TU Berlin***Berlin, Germany***Winter 2019/2020***Houdini Tutorials Tailored for Mathematicians***Online tutorials and course guide, TU Berlin***Berlin, Germany***2016 - Current***Mahtematik für Physiker I***Tutor classes, TU Berlin***Berlin, Germany***Winter 2015/2016***Teaching Assistant***Volunteer, Multicultural Youth and Integration Center "mji e.V."***Berlin, Germany***2012 – 2015***Study Exchange**.....**Sophia Univeristy***Overseas exchange scholarship from the TU Berlin***Tokyo, Japan***Sep 2017 – Feb 2018***Durham Univeristy***Erasmus exchange scholarship from the EU***Durham, United Kingdom***Sep 2013 – Jul 2014***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*.
- 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*

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