# Dr.rer.nat. Theresa Pollinger

## Personal Data


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| Address | OIST The Gardens FN207, 1919-1 Tancha, Okinawa, 904-0497 Japan; German citizen |
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| Online | https://freifrauvonbleifrei.github.io |


## Skills

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| Technical | Strong analytical skills, combined with a passion for programming |
| Social | Good at communicating ideas and collaborating—both in-person and remotely |
| Self | Taking responsibility while being able to use deadlines constructively |

## Education

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| Oct.'18 - Jan.'24 | Doctorate in Computer Science & Simulation Technology, **Universität Stuttgart** |
| Oct.'15 - Jan.'18 | Master's in Computational Engineering, **Friedrich-Alexander-Universität (FAU)** Erlangen-Nuremberg; Member of the Bavarian Graduate School of Computational Engineering |
| Oct.'12 - Nov.'15 | Bachelor's Degree in Mechatronics, **FAU** |
| Sept.'11 - May '12 | Studies of Mechanical Engineering, **Edinburgh Napier University**, Edinburgh |
| July '11 | Finished high school **Gabrieli-Gymnasium**, Eichstaett |

## Work Experience

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| Aug.'24 - | Postdoc in the **Supercomputing Performance Research Team**, R-CCS, Kobe, Japan<br>Exploring the intersection of HPC and AI in hardware and software.<br>\| Supervisor: Dr. Jens Domke |
| June'18 - Nov.'23 | Researcher with the **Scientific Computing Chair**, Stuttgart, Germany<br>Addressed numerical and computational challenges in high-dimensional simulations. Supported the development of a new course on high-dimensional data approximation and learning. \| Supervisor: Prof. Dirk Pflüger |
| Dec.'17 - May'18 | Researcher with the **KWARC group**, Erlangen, Germany<br>Helped to advance knowledge representation for modeling and simulations.<br>\| Supervisor: Prof. Michael Kohlhase |
| April'16 - Feb.'17 | Student Research Assistant at **Fraunhofer IIS**, Tennenlohe, Germany<br>Ported a file system for scalable images (JPEG2000) from Windows to Linux (C++).<br>\| Supervisor: Dr. Heiko Sparenberg |
| Oct.'14 - Jan.'15 | Intern at **Laboratory for Advanced Sensing, Computation and Control**, OSU, USA<br>Evaluated consumer depth cameras for robotics research (C++). Received a pre-placed offer for PhD position as a result of positive review. \| Supervisor: Prof. Weihua Sheng |
| April - Aug.'13 | Student Research Assistant at **Chair of Sensor Technology**, Erlangen, Germany<br>Developed models & processing software for a positioning system (MATLAB).<br>\| Supervisor: Peter Horn |

## Scholarships and Prizes

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| 2023 | **HLRS Golden Spike Award**<br>For a joint simulation on the German national supercomputers HAWK and SuperMUC-NG |
| 2022 | **PASC Best Poster Award**<br>For the poster "Scaling the plasma simulation while conserving the mass" |
| 2012 - 2017 | **Studienstiftung des deutschen Volkes**<br>Full scholarship by the German Academic Scholarship Foundation |
| 2016 | **Brose Bachelorpreis**, Prize for best Bachelor's thesis in Mechatronics |
| 2014 | **Dr. Juergen Ulderup scholarship**, for the internship at ASCC, Stillwater, USA |
| 2013 | **Baumüller Studienpreis**, Prize for best grades in first years' Mechatronics studies |

## Languages

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| Professional | C++, Python, Linux/Shell, git,<br>parallel programming models (MPI, OpenMP, task-based),<br>English (*C1*/*C2 in CEFR*), German (Mother tongue) |
| Advanced | CUDA, MATLAB, build systems, performance engineering methods,<br>Spanish (*B1*), Japanese (*A1*), Latin (Latinum) |

## Selected Publications


[1] T. Pollinger, M. Ishii, and J. Domke, "The Beauty of Anisotropic Mesh Refinement: Omnitrees for Efficient Dyadic Discretizations," Aug. 8, 2025. DOI: 10.48550/arXiv.2508.06316, submitted

[2] T. Pollinger, A. Van Craen, P. Offenhäuser, and D. Pflüger, "Realizing Joint Extreme-Scale Simulations on Multiple Supercomputers—Two Superfacility Case Studies," in *SC24: International Conference for High Performance Computing, Networking, Storage and Analysis*, Nov. 2024. DOI: 10.1109/SC41406.2024.00104

[3] T. Pollinger, A. Van Craen, C. Niethammer, M. Breyer, and D. Pflüger, "Leveraging the Compute Power of Two HPC Systems for Higher-Dimensional Grid-Based Simulations with the Widely-Distributed Sparse Grid Combination Technique," in *Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis*, ser. SC '23, New York, NY, USA: Association for Computing Machinery, Nov. 11, 2023. DOI: 10.1145/3581784.3607036

[4] T. Pollinger, J. Rentrop, D. Pflüger, and K. Kormann, "A stable and mass-conserving sparse grid combination technique with biorthogonal hierarchical basis functions for kinetic simulations," *Journal of Computational Physics*, vol. 491, Oct. 15, 2023. DOI: 10.1016/j.jcp.2023.112338


## Also

Active as a **student representative** throughout my studies
Interested in **social dynamics**: co-founded an initiative for a randomly selected citizen's assembly in Stuttgart