

Dr. IVA VILOVIĆ

Leibniz Institute for Astrophysics Potsdam (AIP)

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As a physicist specializing in habitability, I investigate the conditions for life on exoplanets through an interdisciplinary approach, combining stellar physics, climate-chemistry models, and synthetic observations analysis. I aim to advance our understanding of habitable environments beyond Earth.

Education

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- **Ph.D. Scholarship Holder: Studienstiftung des deutschen Volkes**2021 – 2024
Doctoral Degree in Astrophysics/Astrobiology at the Technische Universität Berlin (TUB)
 - Honors: *summa cum laude*
 - Thesis title: “*Evaluating the Potential of Life on Superhabitable Exoplanets in the Habitable Zones around K Dwarf Stars.*”
 - **Technische Universität Berlin (TUB) – Berlin, Germany**2016 – 2019
Master of Science Degree in Physics
 - Master Thesis in Astrophysics at the German Aerospace Center Berlin (DLR): “*Investigating the Influence of Life upon Earth-like Atmospheres,*” using 1D atmospheric models.
 - **Technische Universität Berlin (TUB) – Berlin Germany**2013 – 2016
Bachelor of Science Degree in Physics
 - Bachelor Thesis in Astrophysics at the Leibniz Institute for Astrophysics in Potsdam (AIP): “*Fundamental Plane & Scaling Relations in Galaxy Cluster ABELL 1689.*”
 - **Hunter College (CUNY) – New York, NY**2012 – 2013
Major in Physics, Minor in Spanish. 3.95 GPA (Grade: A).
 - **Millennium High School – New York, NY**.....2008 – 2012
Advanced Regents Diploma 2012. "A" Honor Roll: 2008 – 2012. High School Salutatorian.

Employment and Experience

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- **AIP – Leibniz Institute for Astrophysics**.....2025 – present
Postdoctoral Researcher; Potsdam, Germany
 - Funded through Prof. Katja Poppenhäger’s ERC Consolidator Grant “*Evaporator: The missing stellar physics component for atmospheric evaporation of exoplanets.*”
 - Research focus: Stellar coronae and elemental abundances to refine X-ray/UV emission models for exoplanet atmospheric evolution and habitability.
 - Aim: Establish abiotic atmospheric baselines for exoplanets under realistic stellar and geophysical constraints, and assess spectral anomalies as potential biosignature indicators.

- **Fichtenberg-Oberschule (Gymnasium)**.....01/2025 – 02/2025
 - Mathematics teacher (substitute position) for high school students in Berlin.
- **Supervision at Technische Universität Berlin (TUB)**.....2023 – 2024
 - 10/2023 – 08/2024: Fanny Marie von Schauenburg, Bachelor thesis: “Statistical Studies of Exoplanet Populations.”
 - 04/2023 – 04/2024: Adetoye Adeyinka, Bachelor thesis: “Testing the hypothesis of aerosol transport between Venus and Earth by physical processes.”
- **AIP – Leibniz Institute for Astrophysics**.....11/2020 – 03/2021
Doctoral Researcher; Potsdam, Germany
 - Worked in the Magnetohydrodynamics and Turbulence group using numerical simulations.
- **TUB: the President's Protocol and Events & TUBS GmbH – TU Berlin ScienceMarketing**.....2015 – 2019
 - Support in the planning, implementation and evaluation of events (e.g. Queen's Lecture, Climate Lecture, Honorary promotions, Long Night of the Sciences, etc.).

Selected Conferences and Talks

- **Invited talks:**
 - 03/24 [“What's out there? Public lecture series”](#) at the Max-Planck-Institute for Solar System Research (MPS).
 - 10/23 Center for Astrobiology (CAB, CSIC-INTA), Madrid, Spain. <https://t.ly/ABA96>
 - 10/22 Earth and Planets Laboratory (EPL) Seminar. Carnegie Institution for Science. Washington DC, USA.
 - 06/22 Exoplanets & Disks Meeting (EDM), Anton Pannekoek Institute (API) Amsterdam, Netherlands.
- **Conference and congress talks:**
 - 09/24, 09/23, 09/22 and 09/21 Europlanet Science Congress and European Astrobiology Network Association.
 - 09/24, 09/23 and 09/21 German Astrobiological Society e.V. (DAbG).
- **University lectures:**
 - 12/23, 10/22 and 05/22 “Life on other Planets? An Introduction to Astrobiology (Parts I and II).” Center for Astronomy and Astrophysics (ZAA) at the Technische Universität Berlin, Germany.
- **Interviews:**
 - 06/25 [ALEX Berlin](#), Raum für Notizen: “Sind wir allein im Universum?”. 08/24 [Web.de](#): LHS 1140b: What makes this planet special. 09/23 [SAGANet](#): Astrobiology Revealed #10.

Selected Achievements and Awards

- **Ph.D. Scholarship Holder: Studienstiftung des deutschen Volkes (2021)**
 Germany's largest, oldest and most prestigious scholarship foundation, funding doctoral candidates on account of their exceptional academic talents and their personalities.
- **European Space Agency (ESA) (2020)**
 Young Graduate Trainee (YGT) finalist for Phi-Experience at ESRI in Frascati, Italy.

Selected Extracurricular Activities

- **Co-founder & Member: Astrobiology working groups**.....2021 – present

Deutsche Astrobiologische Gesellschaft e.V. (DAbG)

- Co-founded the *Communication and Outreach* working group, which aims to connect astrobiology with a variety of audiences via social media platforms.
- Member of the *Instrument development for the detection of life* working group, which aims to advance agnostic biosignature detection beyond Earth-centric assumptions.

Selected Skills

- Fluent in *Croatian, German, and English*; proficient (C1) in *Spanish*.
- Computer literate in the programming language *Python*; *Atmos* coupled climate-photochemical code (Fortran); *POSEIDON* forward modeling code to calculate synthetic planetary spectra; *PandExo* tool for simulating observations of transiting exoplanets with the JWST.

Research Publications

 ORCID: [0000-0003-0586-9373](https://orcid.org/0000-0003-0586-9373)

- **Vilović, I.**, Goyal, J., Heller, R. and von Schauenburg, F.M. (2025), Superhabitable Planets Around Mid-Type K Dwarf Stars Enhance Simulated JWST Observability and Surface Habitability. *Astron. Nachr.* e20240081.
<https://doi.org/10.1002/asna.20240081>
- **Vilović, I.**, Schulze-Makuch, D. & Heller, R. (2024). Observation of Significant Photosynthesis in Garden Cress and Cyanobacteria under Simulated Illumination from a K Dwarf Star. *International Journal of Astrobiology*. 23:e18.
<https://doi.org/10.1017/S1473550424000132>
- **Vilović, I.**, Schulze-Makuch, D. & Heller, R. (2023) Variations in climate habitability parameters and their effect on Earth's biosphere during the Phanerozoic Eon. *Scientific Reports* 13, 12663.
<https://doi.org/10.1038/s41598-023-39716-z>
- Gebauer S., **Vilović I.**, Grenfell J.L., Wunderlich F., Schreier F., & Rauer H. (2021). Influence of Biomass Emissions on Habitability, Biosignatures, and Detectability in Earth-like Atmospheres. *The Astrophysical Journal*, 909(2), 128.
<https://doi.org/10.3847/1538-4357/abd9cc>