

Adam Michael Bauer

adammb4@illinois.edu | +1 (716) 220-3659 | Champaign, IL | ambauer.com | Citizenship: USA

Education

University of Illinois Urbana-Champaign

Doctor of Philosophy in Physics | GPA: 4.000/4.000

Urbana, Illinois

August 2020 — August 2024 (Expected)

Honors/Activities: National Science Foundation Graduate Research Fellowship

Doctoral Thesis: *On the physical drivers and economic consequences of climate-related risk*

University of Arizona

B.S. in Physics (with honors); B.S. in Mathematics | GPA: 3.972/4.000 (Summa Cum Laude)

Tucson, Arizona

August 2016 — May 2020

Honors/Activities: Excellence in Undergraduate Research Award (College of Science), Galileo Circle Scholar, Weaver Research Award

Honors Thesis: *On the behavior of null rays in spherically symmetric spacetimes*

Areas of Expertise

- Climate science • Environmental economics • Climate policy • Applied mathematics • Uncertainty and risk analysis • Numerical optimization • Data visualization and analysis • Mathematical modeling • Scientific communication • Technical writing •

Technical Strengths: Python (Pyomo, Numba, Xarray, Numpy, Scipy, CVXPY, Matplotlib, Jupyter Notebooks, Pandas) • Julia • Github • Github Pages • Microsoft Office • Google Suite • Linux •

Relevant Work Experience

The World Bank Group, Climate Change Division

Research Consultant

Washington, D.C.

June 2023 — Present

- Lead an independent research effort to compute optimal decarbonization investment strategies across economic sectors.
- Incorporate the influence of climate risk on decarbonization investment strategies utilizing numerical stochastic optimization.
- Convert Intergovernmental Panel on Climate Change working group and US government reports into numerical model components.
- Probe the influence of delayed learning about climate uncertainty on optimal decarbonization strategies.
- Author deliverables and a World Bank Policy Research Working Paper on model results.

University of Illinois Urbana-Champaign

Graduate Research Fellow, Undergraduate Research Mentor

Urbana, Illinois

August 2020 — Present

- Spearhead an independent research effort to elucidate the physical drivers of extreme temperatures.
- Understand climate change projections by leveraging observational data, climate model output, and reanalysis products.
- Probe the underlying physical mechanism of heat waves in the midlatitudes using a land-atmosphere coupled model.
- Mentor an undergraduate researcher to perform uncertainty quantification on future climate projections and extremes.
- Start a weekly journal club that discusses papers on climate science, climate policy, economics, and the clean energy transition.
- Author several papers on our work; present results at conferences on climate change, geosciences, and climate change impacts.

Columbia Business School & Tamer Center for Social Enterprise

Research Consultant; Staff Associate II in the Faculty of Business

New York, New York

April 2022 — June 2022; September 2022 — December 2022

- Built a financial-economic integrated assessment model that incorporates climate risk into optimal fossil fuel abatement programs.
- Solved high-dimensional financial asset pricing model for fossil fuel emissions taxes using genetic algorithm optimization techniques.
- Analyzed model results with multivariate regression, ensemble methods, and variance decomposition.
- Wrote a set of comments on the US Federal Reserve's guidelines for climate-related risk management for large financial institutions.
- Authored a CESifo Working Paper on our results; presented work at international conferences on environmental and resource economics, climate change, and climate-related risk.

Selected Publications and Presentations

Bauer, A. M., C. Proistosescu, G. Wagner. *Carbon Dioxide as a Risky Asset*. *Climatic Change*, 177(72), 2024.

Bauer, A. M. *Financial modeling of climate risk supports stringent mitigation action*. European Association of Environmental and Resource Economists Summer Meeting, Limassol, Cyprus, 2023.

Bauer, A. M. *Financial modeling of climate risk supports stringent mitigation action*. Association of Environmental and Resource Economists Summer Meeting, Portland ME, 2023.

Bauer, A. M., D. C. Lafferty, K. Schwarzwald, C. Proistosescu, G. Wagner. *Comments on "Principles for Climate-Related Financial Risk Management for Large Financial Institutions"*. Docket No. OP-1793, The Federal Reserve, 2023.

Bauer, A. M. *The role of local thermodynamics in midlatitude heat waves*. American Geophysical Union Fall Meeting, Chicago, IL, 2022.

Bauer, A. M., et al. *Spherical Accretion in Modified Theories of Gravity*. *The Astrophysical Journal*, 925(2), 2023.

Leadership and Activities

University of Illinois Urbana-Champaign

Graduate & Undergraduate Peer Mentor

Urbana, Illinois

August 2020 — present

- Work with fellow graduate students to ease their transition into our graduate program; assist in finding research mentors.
- Guide undergraduate students to educational resources, mental health services, and other tools to ensure their success.