

# Adam Michael Bauer

National Science Foundation Graduate Research Fellow

Citizenship: USA

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adam-bauer-34

Champaign, IL, USA

## RESEARCH INTERESTS

### Climate economics and risk

*I am interested in understanding how tail risks in the climate system impact climate policy and the economy.*

### The clean energy transition

*I am interested in how to guide the transition from dirty to clean energy using climate-economic models.*

### Mathematical modeling

*I rigorously construct models using a combination of theory, data, and simulations to better explain the world.*

## EDUCATION

### Ph. D. Physics

University of Illinois Urbana-Champaign 2020 –

- Cumulative GPA: 4.000
- Thesis: *On the physical drivers and economic consequences of climate-related risk*

### B.S. Physics & B.S. Mathematics

University of Arizona 2016 – 2020

- Minor: Astronomy and Astrophysics
- Cumulative GPA: 3.972 (Summa Cum Laude)
- Honors Thesis: *On the Behavior of Null Rays in Spherically Symmetric Spacetimes*

## WORK EXPERIENCE

### National Science Foundation Graduate Research Fellow

University of Illinois Urbana-Champaign Aug 2022 – present Urbana, IL

### Short-term Consultant

The World Bank Group Jun 2023 – present Washington DC

### Staff Associate II in the Faculty of Business

Columbia Business School Sep 2022 – Dec 2022 New York, NY

### Research Consultant

Columbia Business School & Tamer Center for Social Enterprise Apr 2022 – Jun 2022 New York, NY

### Graduate Research Assistant

University of Illinois Urbana-Champaign Jan 2021 – Jul 2022 Urbana, IL

### NSF Research Experience for Undergraduates Intern

University of Arizona May 2019 – Aug 2019 Tucson, AZ

### NASA Space Grant Research Intern

University of Arizona Sep 2018 – May 2019 Tucson, AZ

## TEACHING EXPERIENCE

### Guest Lecturer

Course: *ATMS 140 – Climate and Global Change*

University of Illinois Urbana-Champaign Nov 2023 Urbana, IL

### Graduate Teaching Assistant

Course: *PHYS 102 – College Physics: E&M and Modern*

University of Illinois Urbana-Champaign Aug 2020 – Dec 2020 Urbana, IL

\*Made the **List of Teachers Ranked as Excellent By Their Students**.

### Undergraduate Teaching Assistant

Course: *PHYS 103 – Introductory Physics II*

University of Arizona Aug 2019 – Dec 2019 Tucson, AZ

## PUBLICATIONS

## PEER-REVIEWED RESEARCH ARTICLES

(\* implies I directly advised student during the project.)

**Bauer, A. M.**, C. Proistosescu, G. Wagner. Carbon Dioxide as a Risky Asset. *Climatic Change*, 177(72), 2024. (Previously CESifo Working Paper No. 10278 and Columbia CEEP Working Paper No. 23.)

Pascale, M., B. L. Frye, L. Dai, N. Foo, Y. Qin, R. Leimbach, **A. M. Bauer**, E. Merlin, D. Coe, J. Diego, H. Yan, A. Zitrin, S. H. Cohen, C. Conselice, H. Dole, K. Harrington, R. A. Jansen, P. Kamienski, R. A. Windhorst, M. Yun. Possible ongoing merger discovered by photometry and spectroscopy in the field of the galaxy cluster PLCK G165.7+67.0. *The Astrophysical Journal*, 932(85), 2022.

**Bauer, A. M.**, A. Cárdenas-Avendaño, C. F. Gammie, N. Yunes. Spherical accretion in alternative theories of gravity. *The Astrophysical Journal*, 925(2), 2022.

**Bauer, A.**, P. Carter. Existence of transonic solutions in the stellar wind problem with viscosity and heat conduction. *SIAM Journal on Applied Dynamical Systems*, 20(1), 2021.

Frye, B. L., M. Pascale, Y. Qin, A. Zitrin, J. Diego, G. Walth, H. Yan, C. J. Conselice, M. Alpaslan, **A. Bauer**, L. Busoni, D. Coe, S. H. Cohen, M. Dole, M. Donahue, I. Georgiev, R. A. Jansen, M. Limousin, R. Livermore, D. Norman, S. Rabien, R. A. Windhorst. PLCK G165.7+67.0: Analysis of a massive lensing cluster in a Hubble Space Telescope census of sub-millimeter giant arcs selected using Planck/Herschel. *The Astrophysical Journal*, 871(51), 2019.

## WORKING PAPERS, POLICY BRIEFS, COMMENTARY, AND OTHER ACADEMIC WRITINGS

McDonnell, A.\*, **A. M. Bauer**, C. Proistosescu. Does discounting 'hot' climate models improve the predictive skill of climate model ensembles? *ESS Open Archive*, 2024. (Link.)

**Bauer, A. M.**, F. McIsaac, S. Hallegatte. How Delayed Learning about Climate Uncertainty Impacts Decarbonization Investment Strategies. *World Bank Policy Research Working Paper No. 10473*, The World Bank, Washington DC, 2024.

**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 (3 February 2023).

**Bauer, A.**, B. Frye. THELI Reduction Software: A write up for inexperienced data reducers. Posted to THELI forums & Cloudynights.com, 2019. (Theli Forums Link.) (Cloudynights Link.)

## POPULAR PRESS

**Bauer, A. M.**, G. Wagner. Use financial logic to price carbon emissions. *Green Central Banking*, May 2024.

**Bauer, A. M.** Merging Physics and Economics for Climate Policy. *University of Illinois Department of Physics Research Highlight*, 2023. (Link.)

## TALKS AND PRESENTATIONS

### Carbon dioxide as a risky asset

Midwestern Student Conference on Atmospheric Research 📅 October 2023 📍 Urbana, IL

### Financial modeling of climate risk supports stringent mitigation action

European Association of Environmental and Resource Economists Summer Meeting 📅 June 2023 📍 Limassol, Cyprus

### Financial modeling of climate risk supports stringent mitigation action

Association of Environmental and Resource Economists Summer Meeting 📅 May 2023 📍 Portland, ME

### \*Carbon dioxide as a risky asset

Center for Social and Environmental Futures 📅 April 2023 📍 Boulder, CO

### Financial modeling of climate risk supports stringent mitigation action

American Geophysical Union Fall Meeting 📅 December 2022 📍 Chicago, IL

### The role of local thermodynamics in midlatitude heat waves

American Geophysical Union Fall Meeting (Poster) 📅 December 2022 📍 Chicago, IL

### \*Financial modeling of climate risk implies stringent mitigation action

Columbia University Sustainable Development Seminar 📅 November 2022 📍 New York, NY

### \*Exploring the controls on temperature extremes in the midlatitudes

UC San Diego Climate Journal Club 📅 May 2022 📍 San Diego, CA

### Characterization and Analysis of Massive Space Telescopes

Arizona Space Grant Symposium 📅 Apr 2019 📍 Tempe, AZ

### Measuring the Dynamical Masses of Sub-millimeter Selected Gravitational Lenses

Steward Observatory Internal Symposium 📅 Sep 2018 📍 Tucson, AZ

(\* implies an invited talk.)

## ACADEMIC HONORS AND ACHIEVEMENTS

**NSF Graduate Research Fellowship Program**

*On tenure – 2022-2025*

**List of Teachers Ranked as Excellent by Their Students**

*UIUC Department of Physics – 2020*

**NSF Graduate Research Fellowship Program**

*Honorable Mention – 2020*

**The Excellence in Undergraduate Research Award**

*UArizona College of Science – 2020*

**SCHOLARSHIPS AWARDED****Glenn C. Purviance Scholarship**

*UArizona Department of Physics, 2019 – 2020*

**Grogan Scholarship**

*UArizona Department of Mathematics, 2019 – 2020*

**TECHNICAL STRENGTHS****Strong:**

*Python, Mathematica, Jupyter notebooks,  $\LaTeX$*

**Intermediate:**

*Julia*

**Beginner:**

*C/C++, IDL, R*

**EXTRA CURRICULAR****ESE Summer Camp for Girls Volunteer**

*Present – University of Illinois Urbana-Champaign*

**Undergraduate-Graduate Peer Mentor**

*2022-Present – University of Illinois Urbana Champaign  
(Department of Atmospheric Sciences)*

**Graduate Peer Mentor**

*2021-2023 – University of Illinois Urbana Champaign (Department of Physics)*

**Phi Beta Kappa Society**

*Alpha of Arizona Chapter – 2018*

**Galileo Circle Scholar**

*2018 – 2019*

**Weaver Research Award**

*UArizona Department of Physics, 2017 – 2018*

**Highest Academic Achievement**

*UArizona, 2016 – 2017, 2018 – 2019, & 2019 – 2020*

**Gregson Award**

*UArizona Department of Physics, 2019 – 2020*

**Douglass/Langadas Scholarship**

*UArizona Department of Astronomy, 2018 – 2019*

**Grad On-Call**

*2020-2021 – University of Illinois Urbana Champaign*

**Undergraduate Peer Mentor**

*2018-2020 – University of Arizona*

**Physics Discovery Team Member & Project Developer**

*2019 – University of Arizona*