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Research Interests

Computational fluid dynamics and its applications to stellar interiors and atmospheres.
The effects of stratification, rotation, and magnetism on stellar convection.

Education

- May 2020 **Ph.D.**, *University of Colorado – Boulder*, Astrophysical & Planetary Sciences.
Thesis title: “Fundamental Studies of Stratified Stellar Convection: Simulations and Theory”
- Dec. 2017 **M.S.**, *University of Colorado – Boulder*, Astrophysical & Planetary Sciences.
- May 2014 **B.S.**, *Whitworth University*, Physics.

Research Experience

- May 2020-present **Postdoctoral Researcher**, *Laboratory for Atmospheric and Space Physics*, Boulder, CO.
- 2015-2020 **Graduate Research Fellow/Assistant**, *University of Colorado – Boulder & Laboratory for Atmospheric and Space Physics*, Boulder, CO.
- 2013 **NSF Summer Undergraduate Research Fellow**, *LIGO*, Hanford, WA.
- 2012 **DOE Summer Undergraduate Laboratory Intern**, *PNNL*, Richland, WA.

Grants & Fellowships Awarded

- 2018-2020 **NASA Earth and Space Science Fellowship**, \$90,000, Boulder, CO.
Fundamental Studies Into the Solar Convective Conundrum: Do Giant Cells Exist?
Grant Number 80NSSC18K1199
- 2015-2018 **NSO George Ellery Hale Graduate Fellowship**, Boulder, CO.
Fellowship covers tuition, fees, and graduate research stipend for three full years.
Fellowship overview available online at <https://www.nso.edu/students/hale-fellowships/>

Invited Presentations

- 2020 4. *Entropy Rain and the Solar Convective Conundrum: Dilution and Compression of Individual Convective Downflows*
Nordita, Stockholm. “The Shifting Paradigm of Stellar Convection: From Mixing Length Concepts to Realistic Turbulence Modeling” workshop. Mar. 4.
- 2019 3. *Entropy Rain and the Solar Convective Conundrum: Dilution and Compression of Individual Convective Downflows*
Princeton University. Star Formation/ISM Rendezvous (SFIR) Seminar. Dec. 4.
2. *Entropy Rain: Dilution and Compression of Thermals in Stratified Domains*
University of Colorado – Boulder. Applied Math Geophysical and Astrophysical Fluid Dynamics (GAFD) Seminar. Oct. 1.
- 2018 1. *Predicting the Rossby Number in Stratified, Compressible Convection*
National Solar Observatory. Solar Focus Meeting. Dec. 7.

Publications List

- 2020 6. *Convective dynamics with mixed temperature boundary conditions: why thermal relaxation matters and how to accelerate it*
Anders, E.H.; Vasil, G.M.; Brown, B.P.; and Korre, Lydia, [Submitted to PRFluids](#).
- 2019 5. *Entropy Rain: Dilution and Compression of Thermals in Stratified Domains*
Anders, E.H.; Lecoanet, D.; and Brown, B.P., [ApJ 884, 65](#).
4. *Predicting the Rossby Number in Convective Experiments*
Anders, E.H.; Manduca, C.M.; Brown, B.P.; Oishi, J.S.; Vasil, G.M., [ApJ 872, 2](#).
- 2018 3. *Accelerated evolution of convective simulations*
Anders, E.H.; Brown, B.P; and Oishi, J. S., [Physical Review Fluids 3, 083502](#).
- 2017 2. *Convective heat transport in stratified atmospheres at low and high Mach number*
Anders, E.H. and Brown, B.P., [Physical Review Fluids 2, 083501](#).
- 2016 1. *The Advanced LIGO photon calibrators*
Karki, S.; Tuyenbayev, D.; Kandhasamy, S.; Abbott, B.P.; Abbott, T.D.; **Anders, E.H.**; Berliner, J.; Betzwieser, J.; Cahillane, C.; Canete, L.; Conley, C.; Daveloza, H.P.; De Lillo, N.; Gleason, J.R.; Goetz, E.; Izumi, K.; Kissel, J.S.; Mendell, G.; Quetschke, V; Rodruck, M.; Sachdev, S.; Sadecki, T.; Schwinberg, P.B.; Sottile, A.; Wade, M.; Weinstein, A.J., West, M.; and Savage, R.L., [Review of Scientific Instruments 87, 114503](#).

Awards & Honors

- 2019 **AAS 233 Chambliss Graduate Student Poster Contest**, *Honorable Mention*, American Astronomical Society.
- 2016 **Comprehensive Exam II High Pass**, University of Colorado – Boulder.
Awarded for the defense of publication-quality research
- 2016 **Carl Hansen Graduate Fellowship, \$1,000**, University of Colorado – Boulder.
Awarded to a graduate student studying stellar interiors

- 2014 **President's Award for Outstanding Academic Achievement**, Whitworth Univ..
Awarded to students graduating with 4.0 GPAs

Conferences

- 2020 **American Astronomical Society's 235th Meeting**, *Dissertation Talk*, Honolulu, HI.
Numerical Explorations in Stellar Convection
- 2019 **APS Division of Fluid Dynamics**, *Talk*, Seattle, WA.
Dilution and Compression of Thermals in Stratified Domains
- Compressible Convection Conference**, *Talk*, Newcastle Upon Tyne, UK.
Entropy Rain: Dilution and Compression of Turbulent Thermals in Stratified Domains
- Stellar Hydro Days V**, *Poster*, Exeter, UK.
Accelerating the evolution of atmospheric structure in convective simulations
- American Astronomical Society's 233rd Meeting**, *Poster*, Seattle, WA.
Accelerating the evolution of simulated convective atmospheres
- 2018 **APS Division of Fluid Dynamics**, *Talk*, Atlanta, GA.
Predicting the Rossby number in stratified, compressible convection
- 2017 **APS Division of Fluid Dynamics**, *Talk*, Denver, CO.
The effects of Mach number and rotation on heat transport in stratified convection
- Compressible Convection Conference**, *Talk*, Lyon, Fr.
Convective heat transport in stratified atmospheres at low and high Mach number
- 2016 **APS Division of Fluid Dynamics**, *Talk*, Portland, OR.
Sustained shear flows in stratified convection
- AAS Solar Physics Division**, *Poster*, Boulder, CO.
Boundary Layer Structure in Stratified Convection

Departmental Service

- 2019-2020 Member of newly-formed admissions setup committee
- 2018-2019 Voting member of graduate admissions committee
Graduate student member of exams committee
- 2017-2018 Voting member of graduate admissions committee
- 2016-2017 Voting member of hiring committee for director of Fiske Planetarium
Graduate student member of search committee for NSO/CU faculty appointment
Graduate student member of exams committee
- 2015-2016 Graduate student member of search committee for three-year NSO/CU appointment

Professional Development and Teaching Experience

- 2019 **UCSC ISEE Professional Development Program**, *Design Team Leader*.
Led a team through a 4-month, 100-hour program that involved the design and teaching of a day-long inquiry activity on buoyancy.

- 2017 **Co-Instructor of Record**, *ASTR 2600: Introduction to Scientific Programming*, University of Colorado – Boulder, Boulder, CO.
Redesigned course from scratch, including lectures, homeworks, tutorials, and projects.
- 2017 **UCSC ISEE Professional Development Program**, *Participant*.
Designed and taught a day-long inquiry activity on exoplanet transits.
- 2016-2017 **Lead Graduate Teacher**, *Astrophysical & Planetary Sciences Department*, University of Colorado – Boulder, Boulder, CO.
Led video consultations with graduate teaching assistants and acted as bridge between my department and the university-level Graduate Teacher Program.
- 2014-2017 **Graduate Teaching Assistant for ASTR 1010**, *Four semesters*, University of Colorado – Boulder, Boulder, CO.
Fulfilled laboratory and lecture TA roles

Outreach

- 2016-2019 **CU STARS**, *Graduate Student Coordinator*, University of Colorado – Boulder, Boulder, CO.
CU STARS (CU Boulder Science, Technology, and Astronomy RecruitS) visits underserved schools across all of Colorado and gives high school students an opportunity to learn about and engage with space science. Graduate students serve as mentors to undergraduates, help design and improve outreach courses, and ensure outreach visits run smoothly.
- 2014-2017 **Sommers-Bausch Observatory Open House Host**, University of Colorado – Boulder, Boulder, CO.
Operated telescopes and answered questions from the public during free observing nights once or twice per semester.

References

Prof. Benjamin P. Brown

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Prof. Jeffrey S. Oishi

Dept. Physics and Astronomy
Bates College
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Prof. Daniel Lecoanet

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