CURRICULUM VITAE

Sabrina Marbut Appel *September 2023*

CURRENT AFFILIATION

Ph.D. Candidate
Rutgers, The State University of New Jersey,
Department of Physics & Astronomy
136 Frelinghuysen Rd.
Piscataway, NJ 08854

E-mail: appel@physics.rutgers.edu
Phone: (503) 931-1725

EDUCATION

Rutgers, The State University of New Jersey, Piscataway, NJ
Fall 2018 to present
M.S. in Physics, 2022

Reed College, Portland, OR
B.A. in Physics, 2017

RESEARCH EXPERIENCE

Rutgers, The State University of New Jersey
Graduate Researcher *since December 2018*
Advisor: Dr. Blakesley Burkhart
Regularly attend group meetings at the Center for Computational Astrophysics at the Flatiron Institute (Fall 2019 to Present)

Reed College
Senior Thesis *Fall 2016 to Spring 2017*
Advisor: Dr. Andrew Larkoski

American Museum of Natural History
NSF Funded REU Participant *Summer 2016*
Advisor: Dr. Dave Zurek

Rutgers, The State University of New Jersey
NSF Funded REU Participant *Summer 2015*
Advisor: Dr. Andrew Baker

SCHOLARSHIPS, HONORS, AND AWARDS

Noemie Koller Scholarship, awarded by the Rutgers University Physics and Astronomy Department, Fall 2023

SGS Travel Award, awarded by the Rutgers University School of Graduate Studies for participation in the "Olympian Symposium" May-June 2023

Torrey Fellowship, awarded by the Rutgers University Physics and Astronomy Department, June 2022

Peter Lindenfeld Graduate Fellowship, awarded by the Rutgers University Physics and Astronomy Department, Spring 2022

Boyd Scholarship, awarded by the Rutgers University Physics and Astronomy Department, Summer 2019

Travel Award, awarded by the Rutgers University Physics and Astronomy Department for travel to the "Advancing Theoretical Astrophysics Summer School" in July 2019

Phi Beta Kappa, inducted to the Reed College Chapter May 15, 2017

NSF Scholar, awarded by Reed College for the 2014/15, 2015/16, and 2016/17 academic years

President's Commendation for Academic Excellence, awarded by Reed College

for academic performance in the 2013/14, 2014/15, 2015/16 and 2016/17 academic years

Reed College Grant, awarded by the Reed College Financial Aid Office for the 2013/14, 2014/15, 2015/16, and 2016/17 academic years

Publications

† - indicates an undergraduate student mentee

†Kiihne, A., **Appel, S. M.**, Burkhart, B., Semenov, V. A., Federrath, C. 2023, arXiv e-prints, arXiv:2305.11218, doi: 10.48550/arXiv.2305.11218

Appel, S. M., Burkhart, B., Semenov, V. A., Federrath, C., Rosen, A. L. Tan, J. C., 2023, ApJ, 954, 93, doi: 10.3847/1538-4357/ace897

Cournoyer-Cloutier, C., Sills, A., Harris, W. E., **Appel, S. M.**, Lewis, S. C., Polak, B., Tran, A., Wilhelm, M. J. C., Mac Low, M.-M., McMillan, S. L. W., Zwart, S. P., 2023, MNRAS, 521, 1338, doi: 10.1093/mnras/stad568

Appel, S. M., Burkhart, B., Semenov, V. A., Federrath, C., Rosen, A. L., 2022, ApJ, 927, 75, doi: 10.3847/1538-4357/ac4be3

B. Burkhart, **S. Appel**, S. Bialy, J. Cho, A. J. Christensen, D. Collins, C. Federrath, D. Fielding, D. Finkbeiner, A. S. Hill, J. C. Ibanez-Mejia, M. R. Krumholz, A. Lazarian, M. Li, P. Mocz, M.-M. Mac Low, J. Naiman, S. K. N. Portillo, B. Shane, Z. Slepian, Y. Yuan, "*The Catalogue for Astrophysical Turbulence Simulations (CATS)*", 2020, ApJ, 905, 14, doi: 10.3847/1538-4357/abc484

Theses

"Simulating the Gravitational Lensing of Massive Particles: An Exploration of Scattering Solutions of the Schwarzschild Metric," Senior thesis in Physics, Reed College, submitted April 28, 2017

Thesis Advisor: Andrew Larkoski (Visiting Assistant Professor at Reed College)

Conference Organization

Fall 2022 TORCH Regional Meeting, Center Computational Astrophysics, Flatiron Institute, New York, NY, (October 21, 2022)

- Head of the Scientific Organizing Committee and the Local Organizing Committee

Summer 2022 TORCH Workshop, Center Computational Astrophysics, Flatiron Institute, New York, NY, (August 17-19, 2022)

- Head of the Scientific Organizing Committee and the Local Organizing Committee

Service

Various Leadership Roles in the Minorities in Physics and Astronomy (MiPA) group, Rutgers, the State University of New Jersey, Piscataway, NJ

- **Past President** - September 2023 to present
- **President** - December 2022 to September 2023
- **Graduate Chair** - Summer 2020 to December 2022
- **Co-Coordinator of the Equity and Inclusion Journal Club** - Summer 2020 through Summer 2022
- Led the creation of a MiPA Charter and Code of Conduct (Summer to Fall 2020)
- Led the creation of an Equity and Inclusion Journal Club (EIJC; Summer 2020)
- Led or organized various initiatives and events

Founder of the Equity and Inclusion Journal Club, Rutgers, the State University of New Jersey, Piscataway, NJ (Beginning Summer 2020)

Officer in the Women in Physics and Astronomy (WiPA) group, Rutgers, the State University of New Jersey, Piscataway, NJ (Summer 2019 to Summer 2020)

- Co-led the effort to establish weekly meetings
- Co-led the transition from Women in Physics and Astronomy to Minorities in Physics and Astronomy (Spring and Summer 2020)

Co-President of the Physics and Astronomy Graduate Student Organization, Rutgers, the State University of New Jersey, Piscataway, NJ (Elected for 2019-2020)

Participant in WFIRST Advocacy Day, as a representative of Rutgers University, Washington D.C, (March 5, 2020)

Memberships and Activities (Selected)

Minorities in Physics and Astronomy (MiPA), Rutgers, the State University of New Jersey, Piscataway, NJ, Member Summer 2020 to present

Women in Physics and Astronomy (WiPA), Rutgers, the State University of New Jersey, Piscataway, NJ, Member Fall 2018 to Summer 2020

American Astronomical Society (AAS), Junior Member Fall 2015 to Fall 2017 *and* February 2020 to Present

American Physical Society (APS), Member Fall 2015 to Fall 2018

STEMGeMs, a group for the promotion of women and gender minorities in the sciences, Reed College, Member Spring 2014 to May 2017

Student Mentoring

Avery Kiihne, undergraduate researcher, Summer 2021 - Summer 2022, Rutgers University

Outreach and Teaching (Selected)

Teaching Assistant, Computational Astrophysics, Rutgers, The State University of New Jersey, Piscataway, NJ (Fall 2022)

Teaching Assistant, Byrne Seminar: The Rutgers Undergraduate Pipeline to Research & Education in Physics (RU-PREP), Rutgers, The State University of New Jersey, Piscataway, NJ (Fall 2020)

- Includes being available as a mentor for the duration of the students' undergraduate program.

Near Peer Mentor for fellow graduate students, Physics and Astronomy Department, Rutgers, The State University of New Jersey (Summer 2019 to Present)

Teaching Assistant, Extended Analytical Physics II, Rutgers, The State University of New Jersey, Piscataway, NJ (Spring 2019)

Teaching Assistant, Extended Analytical Physics I, Rutgers, The State University of New Jersey, Piscataway, NJ (Fall 2018)

Volunteer, Physics Lab & Featured Exhibits, Oregon Museum of Science and Industry, Portland, OR (2017-2018)

Teaching Assistant, Introductory Physics Laboratory, Reed College, Portland, OR (2014-2017)

Telescope Operator, Reed College, Portland, OR (2016-2017)

Invited Talks

"How the Gas Dynamics Set the Star Formation Rates of Molecular Clouds," and invited Young MMF talk at the Midwest Magnetic Fields Workshop 2023, online, May 26, 2023

"How the Gas Dynamics Set the Star Formation Rates of Molecular Clouds," an invited talk at the Princeton "Thunch" Series, Princeton, NJ, April 20, 2023

"How the Gas Dynamics Set the Star Formation Rates of Molecular Clouds," an invited talk at "KITP: Conference on Galaxy Formation and Evolution in the Data Science Era", UC Santa Barbara, CA, March 21, 2023

Conferences, Summer Schools, and Workshops

The "2023 Northeast Star and Planet Formation Meeting," Center for Astrophysics (CfA), Cambridge, MA, June 28, 2023

"The Olympian Symposium," Paralia Katerini, Mt. Olympus, Greece, May 29 - June 2, 2023

Midwest Magnetic Fields Workshop 2023, online, May 22-26, 2023

Spring 2023 TORCH Regional Meeting, American Museum of Natural History, New York, NY, (April 5, 2023)

Fall 2022 TORCH Regional Meeting, Center Computational Astrophysics, Flatiron Institute, New York, NY, (October 21, 2022)

"Clusters Workshop at McMaster University", Hamilton, Ontario, Canada, (August 22-24, 2022)

Summer 2022 TORCH Workshop, Center Computational Astrophysics, Flatiron Institute, New York, NY, (August 17-19, 2022)

"With Two Eyes: A three week scientific session of the Interstellar Institute," Institut Pascal, Paris-Saclay, France, (July 18-29, 2022)

"From Stars to Galaxies II," Chalmers University, Gothenberg, Sweden, (June 20-24, 2022)

VICO-CICO Fall 2021 Workshop, University of Virginia, Charlottesville, Virginia, (December 9-10, 2021)

The Mid-Atlantic Section of the APS Meeting, Rutgers, The State University of New Jersey, Piscataway, New Jersey, (December 3-5, 2021)

"The Grand Cascade: A three week scientific session of the Interstellar Institute," Institut Pascal, Paris-Saclay, France (attended virtually), (July 12-30, 2021)

The 238th AAS Meeting, Virtual, (June 7-9, 2021)

The 236th AAS Meeting, Virtual, (June 1-3, 2020)

"New England Star Formation Meeting," University of Connecticut, Storrs, Connecticut, (January 17, 2020)

"Gotham Fest 2019," Simons Foundation Center for Computational Astrophysics, New York, New York, (September 6, 2019)

"Torch Open Source Workshop: Introduction to Structure and Use," Simons Foundation Center for Computational Astrophysics, New York, New York, (August 28-30, 2019)

"Advancing Theoretical Astrophysics Summer School," University of Amsterdam, Amsterdam, The Netherlands, (July 15-26, 2019)

The 229th AAS Meeting, Grapevine, TX, (January 3-7, 2017)

The 227th AAS Meeting, Kissimmee, FL, (January 4-8, 2016)

Selected Talks, Posters etc.

"How the Gas Dynamics Set the Star Formation Rate of Molecular Clouds," a talk at the "2023 Northeast Star and Planet Formation Meeting," Center for Astrophysics (CfA), Cambridge, MA, June 28, 2023

"How the Gas Dynamics Set the Star Formation Rate of Molecular Clouds," a talk at "The Olympian Symposium," Paralia Katerini, Mt. Olympus, Greece, June 2, 2023

"The Impact of Stellar Feedback on the Dynamics and Evolution of Star Forming Regions ," a talk at the "Clusters Workshop at McMaster University", Hamilton, Ontario, Canada, August 23, 2022

"Implementing Protostellar Outflows in TORCH," a talk at the Summer 2022 TORCH Workshop, Center Computational Astrophysics, Flatiron Institute, New York, NY, August 17-19, 2022

"The Impact of Stellar Feedback on the Dynamics and Evolution of Star Forming Regions," a talk at "With Two Eyes: A three week scientific session of the Interstellar Institute," Institut Pascal, Paris-Saclay, France, July 21, 2022

"The Impact of Stellar Feedback on the Dynamics and Evolution of Star Forming Regions," Poster, "From Stars to Galaxies II," Chalmers University, Gothenberg, Sweden, June 20-24, 2022

"The Impact of Stellar Feedback on the Density PDF in Star Forming Regions" VICO-CICO Fall 2021 Workshop, University of Virginia, December 9, 2021

"The Impact of Stellar Feedback on the Density PDF in Star Forming Regions" The Mid-Atlantic Section of the APS Meeting, Rutgers, The State University of New Jersey, December 3, 2021

"Women in Physics: A Case Study of Equity Issues in Physics," Student Seminar in Physics and Astronomy, Rutgers, The State University of New Jersey, March 14, 2019 (joint talk with Charlotte Olsen)

- Gave the same talk again November 21, 2019, October 22, 2020, and December 2, 2021 (Online)

"Towards an Analytic Model of Star Formation: What Makes Star Formation Inefficient?" Interstellar Institute's program "The Grand Cascade", Paris-Saclay University's Institut Pascal, July 26, 2021

"Towards an Analytic Model of Star Formation: What Makes Star Formation Inefficient?" CICO-VICO Fall 2020 Workshop, Online, December 14, 2020

"Investigating the Impact of Stellar Feedback on Models of Star Formation," iPoster, 236th AAS Meeting, Jun. 1-3, 2020

"Investigating the Impact of Stellar Feedback on Models of Star Formation," Gotham Fest 2019, Simons Foundation Center for Computational Astrophysics, New York, New York, (September 6, 2019)

"Simulating Gravitational Lensing," Senior Thesis Oral Examination, Reed College, May 2, 2017 (2-hour exam before an interdisciplinary, 4-person board of faculty)

"Simulating Gravitational Lensing," Senior Thesis Talk, Reed College Physics Department, March 29, 2017

"From the Ultraviolet to the Infrared: The Stars of M70," Poster, 229th AAS Meeting, January 6, 2017

"From the Ultraviolet to the Infrared: The Stars of M70," Reed College Physics De-

partment, September 28, 2016

"From the Ultraviolet to the Infrared: The Stars of M70," AMNH, August 3, 2016

"Star Formation in Nearby Analogues of Lyman Break Galaxies," Poster, 227th AAS Meeting, January 6, 2016

"Star Formation in Nearby Analogues of Lyman Break Galaxies," Reed College Physics Department, September 16, 2015

"Star Formation in Nearby Analogues of Lyman Break Galaxies," Poster, Rutgers, The State University of New Jersey, July 29, 2015

"Star Formation in Nearby Analogues of Lyman Break Galaxies," Rutgers Physics and Astronomy Department, July 22, 2015