SAMUEL M. FACTOR

Curriculum Vitae

Univ. of Texas at Austin Dept. of Astronomy, 2515 Speedway, Stop C1400, Austin, TX 78712
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EDUCATION

The University of Texas at Austin, Austin, TX
Ph.D., Astronomy (Advisor: Dr. Adam Kraus) (expected) 2021

Wesleyan University, Middletown, CT
M.A., Astronomy (Advisor: Dr. A. Meredith Hughes) 2015
Thesis Title: *ALMA Observations of Molecular Gas Emission from a Protoplanetary Disk in the Orion Nebula*

B.A., Physics and Computer Science, ΦBK, GPA: 3.93 2014

RESEARCH EXPERIENCE

Graduate Student Researcher Advisor: Dr. Adam Kraus 2015–Present
Department of Astronomy, The University of Texas at Austin, Austin, TX

- Applying an interferometric analysis technique to archival HST imaging to search for companions to nearby stars below the diffraction limit.
- Analysis utilized the Lonestar5 cluster at the Texas Advanced Computing Center (TACC).

Graduate Student Researcher Advisor: Dr. A. Meredith Hughes 2014–2015
Astronomy Department, Wesleyan University, Middletown, CT

- Modeled the temperature and density structure of a protoplanetary disk in the Orion Nebula Cluster using Atacama Large Millimeter/submillimeter Array observations of molecular gas.
- Analysis utilized Wesleyan University's High Performance Compute Cluster.

Undergraduate Research Assistant Advisor: Dr. Fred Ellis 2012–2014
Physics Department, Wesleyan University, Middletown, CT

- Built and tested the scattering properties of electronic circuits modeling optical systems.
- Research topics include: PT-symmetric systems, wave transport, asymmetric transport, nonlinear systems, unidirectional lasing.

TEACHING EXPERIENCE

Teaching Assistant AST 307: Introductory Astronomy Fall 2020
Department of Astronomy, The University of Texas at Austin, Austin, TX

Teaching Assistant AST 376/392G: Observational Methods in Astronomy Fall 2018
Department of Astronomy, The University of Texas at Austin, Austin, TX

Institute for Scientist & Engineer Educators Professional Development Program 2018
Intensive teaching workshop focusing on inquiry, equity & inclusion, and assessment.

Teaching Assistant AST 301: Introduction to Astronomy Fall 2015
Department of Astronomy, The University of Texas at Austin, Austin, TX

Teaching Assistant ASTR 107: The Universe, ASTR 211: Observational Astronomy 2014–2015
Astronomy Department, Wesleyan University, Middletown, CT

Course Assistant COMP 112: Intro. to Programming, PHYS 215: Special Relativity 2012, 2013
Computer Science and Physics Departments, Wesleyan University, Middletown, CT

HONORS & AWARDS

Board of Visitors Graduate Student Second Year Research Defense Award, UT Austin 2017
Chambliss Astronomy Achievement Award, Honorable Mention, AAS Winter, 2016
Frank N. Edmonds, Jr. Memorial Fellowship in Astronomy, UT Austin 2016
ΦBK, Wesleyan University Spring, 2014
Barry M. Goldwater Scholarship, Honorable Mention 2013
Karl Van Dyke Prize, Wesleyan University Physics Dept. 2013
Dean's List, Wesleyan University 2010 - 2014

FUNDING

Kernel-Phase Detection Limits for Planet Discovery with JWST
PI of Cycle 1 James Webb Space Telescope Archival Research Grant 2509, 2021 $TBD

Discovery of Young Planetary Systems with Kernel-Phase Interferometry
PI of Cycle 29 Hubble Space Telescope Archival Research Grant 16612, 2021 $TBD

University Graduate Continuing Fellowship
The University of Texas at Austin Graduate School, 2018-2019 ~$40,000

Kernel-Phase Interferometry for Super-resolution Detection of Faint Companions
PI of Cycle 24 Hubble Space Telescope Archival Research Grant 14561, 2016 $141,430

John W. Cox Graduate Excellence Fellowship
University of Texas at Austin Dept. of Astronomy recruiting Fellowship, 2015 ~$18,000

Travel to: 225th Meeting of the American Astronomical Society
PI of Student Travel Grant, CT Space Grant College Consortium, 2015 $1,000

PUBLICATIONS

Mann, A. W. et al. 2019, *The Astrophysical Journal*, 871, 63, "How to Constrain Your M Dwarf. II. The Mass–Luminosity–Metallicity Relation from 0.075 to 0.70 Solar Masses" (**10th author**)

S. Factor, A. M. Hughes, K. Flaherty, R. K. Mann, J. Di Francesco, J. P. Williams, L. Ricci, B. C. Matthews, J. Bally, D. Johnstone, 2017, *The Astronomical Journal*, 153, 233, "ALMA Observations of Asymmetric Molecular Gas Emission from a Protoplanetary Disk in the Orion Nebula"

J. M. Lee, **S. Factor**, Z. Lin, I. Vitebskiy, F. Ellis, T. Kottos, "Reconfigurable directional lasing modes in cavities with generalized $\mathcal{PT}$ Symmetry," *Phys. Rev. Lett.*, vol 112, p. 253902, Jun 2014

M. Chitsazi, **S. Factor**, J. Schindler, H. Ramezani, F. M. Ellis and T. Kottos, "Experimental observation of lasing shutdown via asymmetric gain," *Phys. Rev. A*, vol. 89, p. 043842, Apr 2014

N. Bender, **S. Factor**, J. D. Bodyfelt, H. Ramezani, D. N. Christodulides, F. M. Ellis, and T. Kottos, "Observation of asymmetric transport in structures with active nonlinearities," *Phys. Rev. Lett.*, vol. 110, p. 234101, June 2013

PRESENTATIONS

A NICMOS Kernel-Phase Interferometry Survey of Brown-Dwarf Binary Demographics (talk),
Virtual Masking Hackathon, July 2021, Virtual

Kernel-Phase Interferometry for Super-Resolution Detection of Faint Companions (poster),
20.5th Cambridge Workshops of Cool Stars, Stellar Systems and the Sun, March 2021, Virtual

Kernel-Phase Interferometry for Super-Resolution Detection of Faint Companions (poster),
Extreme Solar Systems IV, August 2019, Reykjavik, Iceland

Kernel-Phase Interferometry for Super-Resolution Detection of Faint Companions (poster),
Stars: Birth and Death, 6th Annual GMT Community Science Meeting, September 2018, Honolulu, HI

Kernel-Phase Interferometry for Super-Resolution Detection of Faint Companions (poster),
20th Cambridge Workshop of Cool Stars, Stellar Systems, and the Sun, August 2018, Boston, MA

Kernel-Phase Interferometry for Super-Resolution Detection of Faint Companions (poster),
Star and Planet Formation in the Southwest 2, March 2018, Oracle, AZ

Kernel-Phase Interferometry for Super-Resolution Detection of Faint Companions (poster number 118.03),
230th Meeting of the AAS, June 2017, Austin, TX

Kernel-Phase Interferometry for Super-Resolution Detection of Faint Companions (poster number 146.25),
229th Meeting of the AAS, January 2017, Grapevine, TX (Chambliss Honorable Mention)

`Git` is great! (slides),
UT Austin Graduate Student Postdoc Seminar, November 2016, Austin, TX

Kernel-Phase Interferometry for Super-Resolution Detection of Faint Companions (poster),
Sagan Exoplanet Summer Workshop, July 2016, Pasadena, CA

ALMA Observations of Molecular Gas Emission from a Protoplanetary Disk in the Orion Nebula Cluster (poster), *Frank N. Bash Symposium*, October 2015, Austin, TX

Characterizing a Young Protoplanetary Disk in the Orion Nebula Cluster (poster number 349.06),
225th Meeting of the American Astronomical Society, January 2015, Seattle, WA

OUTREACH AND SERVICE

Astrobites, Author astrobites.org 2018–2019
Write brief paper summaries accessible to undergraduate level students.

Astronomy Graduate Student Executive Committee, UT Austin, Computer Officer 2017–2021

Astronomy on Tap Austin TX, Organizing Committee and Speaker 2016–Present
Present free, accessible astronomy talks in a bar to $\sim$ 300 people monthly.

TAURUS Summer Program, McDonald Trip Committee, Webmaster 2017,2019
Organized and lead the program's observing trip to McDonald Observatory.

UT Austin Girl Day Festival, Volunteer 2017, 2018, 2021
Facilitated hands on astronomy activities for over 8,000 middle school girls and their families.

Ask an Astronomer, Author 2015–2016
Answered questions from the public through askanastronomer.org

Public Observing, Van Vleck Observatory, Wesleyan University, Middletown, CT 2014–2015
Helped host weekly public observing and kids nights.

OBSERVING EXPERIENCE

0.8m Telescope, PFC, McDonald Observatory (P.I. Observing Course)	>30 nights
Harlan J. Smith 2.7m, DIAFI, McDonald Observatory (P.I. TAURUS, Observing Course)	4 nights
HJS 2.7m, GCMS (VIRUS-P), McDonald Observatory (P.I. TAURUS)	3 nights
HJS 2.7m, Tull Coude Spectrograph (TS23), McDonald Obs. (P.I. A. Rizzuto, Observing Course)	12 nights
Keck II, NIRC2 LGS, Mauna Kea Observatory, (P.I. A. Mann)	1 night

MEMBERSHIPS

Junior Member, American Astronomical Society 2015–Present

PROGRAMMING LANGUAGES & SOFTWARE

Python, Git, LaTeX, MIRIAD, CASA, Mathematica, C, Ruby, Rails, Java, Visual Basic, SML, Agda

EXTRACURRICULAR ACTIVITIES

Volunteer Coach, Austin Rowing Club	2017–Present
Certified Open Water Diver, PADI (28 dives)	2013–Present
Volunteer Assistant Coach, Wesleyan University Men's Varsity Rowing	Fall, 2015
Wesleyan University Men's Varsity Rowing	2010–2014
NESCAC All Sportsmanship Team, New England Small College Athletic Conference	2014
Stewards' All Academic Team, Eastern College Athletic Conference	2012–2014
NESCAC All Academic Team, New England Small College Athletic Conference	2012–2014
Head of the Charles Men's Collegiate 8+, 5th place	2013
New England Rowing Championships Men's JV 8+, 3rd place	2013, 2014

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