Hannah Hasson

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https://hrhasson.github.io/

EDUCATION

University of Rochester
Ph.D in Physics — *Anticipated Summer 2023*
Master of Arts in Physics — *May 2021*

University of Texas at Austin — *May 2018*
Bachelor of Science in Physics, Bachelor of Science in Astronomy — Overall GPA: 3.68/4.0
Special Honors in Astronomy

TECHNICAL STRENGTHS

Computer Languages	Python, Mathematica, MATLAB, Bash
Software & Tools	VisIT, LaTeX, ImageJ, AutoCAD, Excel
Hard skills	Soldering, mill, lathe, basic and high-voltage electronics Operating high-power optical lasers, alignment of optical systems
Communication	Comfortable with public speaking, intermediate Spanish speaker

RESEARCH EXPERIENCE

University of Rochester Physics & Astronomy Dept — August 2018 - present
Graduate Research Assistant under P. Gourdain — *Rochester, NY*

- Simulating novel 3D printed loads for pulsed power accretion outflows experiment
- Running plasma accretion outflow experiments on Cornell's COBRA driver
- Constructing shearing interferometer and Thomson scattering plasma diagnostics in Gourdain lab

Sandia National Lab — June - August 2019
Graduate Research Intern under C. Myers — *Albuquerque, NM*

- Wrote MATLAB scripts to test b-dot calibration methods for Z Machine
- Helped construct shadowgraphy plasma diagnostic for Mykonos driver

University of Texas Astronomy Department — August 2016 - August 2018
Undergraduate Researcher under K. McQuinn — *Austin, TX*

- Observed for 3 nights on the 107" telescope at McDonald Observatory
- Used IRAF code to reduce CCD image data and calculate star formation rates of dwarf galaxies

Rice University Physics & Astronomy Department — June 2014 - Jan 2018
Undergraduate Researcher under E. Liang — *Houston, TX*

- Built and tested novel scintillator gamma-ray spectrometer
- Collected spectral data and served as co-lead for positron experiment at Texas Petawatt Laser
- Conducted filter stack spectrometer calibration tests with Na-22 source

University of Texas at Austin Astronomy Department January 2015- December 2015
Student in Freshman Research Initiative under M. Montgomery *Austin, TX*

- Reduced streaked spectra from white dwarf experiment at Sandia National Lab
- Observed on 30", 36", and 82" telescopes at McDonald Observatory

PUBLICATIONS

A Scintillator Attenuation Spectrometer For Intense Gamma-Rays
E Liang, KQ Zheng, K Yao, W Lo, **H Hasson**, A Zhang, M Burns, WH Wong, Y Zhang, A Dashko, H Quevedo, T Ditmire, G Dyer
DOI: 10.1063/5.0082131
Published 2022/6/2

Using extended MHD to explore lasers as a trigger for x-pinches
JR Young, MB Adams, **H Hasson**, I West-Abdallah, M Evans, P-A Gourdain
DOI: 10.1063/5.0060581
Published 2021/10/28

Coreless Fast Pulsed-Power Drivers
P-A Gourdain, M Evans, P Efthimion, R Ellis, W Fox, **HR Hasson**, H Ji, RV Shapovalov, JR Young, I West-Abdallah
DOI: 10.1109/TPS.2021.3086322
Published 2021/6/22

Design of a 3-D Printed Experimental Platform for Studying the Formation and Magnetization of Turbulent Plasma Jets
HR Hasson, MB Adams, M Evans, R Shapovalov, I West-Abdallah, J Young, J Greenly, D Hammer, B Kusse, C Seyler, A Frank, P-A Gourdain
DOI: 10.1109/TPS.2020.3020000
Published 2020/09/18

Current adding transmission lines for compact MA-class linear transformer drivers
P-A Gourdain, MB Adams, M Evans, **HR Hasson**, RV Shapovalov, RB Spielman, JR Young, I West-Abdallah
DOI: : 10.1103/PhysRevAccelBeams.23.030401
Published 2020/3/30

Low-Inductance Load Test of a New 250-Ka, 150-Ns Pulser for Fast X-Pinch Sources
R Shapovalov, M Adams, M Evans, **H Hasson**, J Young, I West-Abdallah, PA Gourdain
DOI: : 10.1109/PPPS34859.2019.9009748
Published 2019/6/23

Enhancing cylindrical compression by reducing plasma ablation in pulsed-power drivers
P-A Gourdain, MB Adams, M Evans, **HR Hasson**, RV Shapovalov, JR Young, I West-Abdallah
DOI: : 10.1063/1.5086305
Published 2019/4/17

High e+/e- ratio dense pair creation with 1021 W.cm-2 laser irradiating solid targets
E Liang, T Clarke, A Henderson, W Fu, W Lo, D Taylor, P Chaguine, S Zhou, Y Hua, X Cen, X Wang, J Kao, **H Hasson**, G Dyer, K Serratto, N Riley, M Donovan, T Ditmire
DOI: : 10.1038/srep13968
Published 2015/9/14

TALKS & POSTERS

Experimental Results from a Pulsed-Power Platform to Study Accretion-Driven Astrophysical Outflows
Poster presented at the 2022 High Energy Density Laboratory Astrophysics conference

Studying the Collimation of Outflows in Radially Converging Plasmas from a 3D-Printed Load
Poster presented at the 2021 APS Division of Plasma Physics conference

The Generation of Magnetized Jets Using 3D Printed Loads on a Pulsed-Power Driver
Poster presented at the 2020 ZNetUS conference

The Generation of Magnetized Jets Using 3D Printed Loads on a Puled-Power Driver
Poster presented at the 2019 APS Division of Plasma Physics conference

A Study of Magnetized Jet Stability Using High Energy Density Plasmas
Talk given at the 2019 Pulsed Power and Plasma Science conference

A Study of Magnetized Jet Stability Using High Energy Density Plasmas
Poster presented at the 2019 Women in Space conference

A Study of Disk-Jet Transitions Using Pulsed-Power Generators
Poster presented at the 2018 APS Division of Plasma Physics conference

TEACHING

Computational Research Access NEtwork (CRANE) Dec 2021 - present
Curriculum developer, lecturer, teaching assistant

- Co-developed lessons and program structure for python-based computational methods workshop for undergrad level
- Assisted students with practice problems in lectures taught by other instructors
- See `https://compmethods0.wixsite.com/computationalmethods`

Gourdain lab summer high school internship program August 2020, July 2021, July 2022
Program lead, curriculum developer, graduate mentor *University of Rochester*

- Co-designed month-long introduction to research curriculum with I. West-Abdallah (see `https://hrhasson.github.io/outreach.html`)
- Developed and taught three-day introductory Python course (see `https://github.com/hrhasson/`)
- Mentored pairs of high school students through experimental laser diagnostic projects

Center for Matter at Atomic Pressures (CMAP) Summer School August 2021
Lecturer *University of Rochester*

- Led 3 hour workshop on simulating a simple accretion-to outflow system in 2D hydrodynamics with python

PHY 122P (Electricity & Magnetism), PHY 121P (Mechanics) August 2018 - May 2019
Graduate Teaching Assistant *University of Rochester*

- Head TA for two semesters of flipped-classroom undergraduate introductory physics courses. Worked one-on-one teaching students, graded exams, met with students needing guidance

AST 307 (Intro Astronomy) Fall 2017
Undergraduate teaching assistant *University of Texas at Austin*

- Provided in-class assistance for students
- Shared grading of assignments and exams with graduate TA

Freshman Research Initiative January 2016 - May 2016
Peer Mentor *UT Austin*

- Led students in research project with MESA stellar evolution code
- Helped teach students Python coding and other astronomy research tools

Algebra and Precalculus tutoring Fall 2014-Spring 2018
Volunteer tutor *Gonzalo Garza High School*

- Volunteered 2-3 hours per week tutoring high school math

AWARDS & HONORS

High Energy Density Laboratory Astrophysics conference poster award	*May 2022*
APS CUWiP Research Poster Award	*Jan 2018*
Barry Goldwater National Scholarship-Honorable Mention	*Spring 2017*
APS CUWiP Research Poster Award	*Jan 2017*
Kemp-Forman Memorial Endowed Presidential Scholarship	*Fall 2016-Spring 2017*
Merner Scholarship in Natural Sciences	*Fall 2016-Spring 2017*
Darrell W. Moffitt, Jr. Endowed Presidential Scholarship	*Spring 2016*
Walter E. Millet Scholarship	*Fall 2015-Spring 2016*
National Instruments Endowed Scholarship for Excellence	*Fall 2015-Spring 2016*

LEADERSHIP

Physics & Astronomy Graduate Student Association August 2019 - July 2022
Secretary, President *University of Rochester*

- Successfully advocated for department to handle payment of student healthcare
- Conducted events for career development, outreach, and community building among physics graduate students
- Assisted the department's Graduate Admissions Committee with recruiting weekend for admitted students
- Served on the department's Diversity, Equity and Inclusion committee

Graduate Women in Physics & Astronomy October 2018 - present
Board Member *University of Rochester*

- Organizing mentorship and community among women graduate students in physics

Undergraduate Women in Physics August 2014 - May 2018
Treasurer, Vice President, President, Senior Board Member *UT Austin*

- Mentored and provided resources to fellow undergraduate women in physics and astronomy

Dean's Scholars Honors Program August 2014-May 2016
Council Member *UT Austin*

- Coordinating with team of 10 students responsible for planning social and mentoring events