Jared Siegel | Curriculum Vitae

University of Chicago, Department of Astronomy & Astrophysics — Chicago, IL 60637

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Education

University of Chicago | Chicago, IL Expected June 2022

Bachelor of Arts in Physics
Bachelor of Science in Astrophysics

Research Experience

Developing Stellar Activity Mitigation Methods for Radial Velocity Analysis Summer 2021
California Institute of Technology SURF | Supervised by Andrew Howard

- Created an independent `python` package for line-by-line radial velocity analysis
- Introduced and validated a novel stellar activity mitigation method based on variable line depth

Investigating Detection Biases in the X-ray Binary Population Summer 2020
Northwestern University NSF CIERA REU | Supervised by Vicky Kalogera and Christopher Berry

- Conducted population synthesis studies of stellar binary formation and evolution
- Utilized accretion disk physics and Monte Carlo methods to infer detection probabilities

Exploring Exoplanet Resonant Chains Nov. 2019 to Present
University of Chicago Dept. of A. & A. | Supervised by Daniel Fabrycky

- Investigated the formation and evolution of exoplanet systems through N-body integrations
- Conducted exoplanet population studies through statistical inference techniques

Analyzing Supernova Remnant X-ray Emission Jan. 2019 to Sept. 2020
University of Chicago Dept. of A. & A. | Supervised by Vikram Dwarkadas and Kari Frank

- Implemented new methods for chemical abundance calculations within supernova remnants
- Prepared and processed *XMM-Newton* X-ray observations of supernova remnants

Publications

Refereed Publications

4. "Can the Fe K-alpha line reliably predict supernova remnant progenitors?"

   Siegel J, Dwarkadas VV, Frank K, Burrows DN. 2021, accepted to ApJ.

3. "Resonant Chains of Exoplanets: Libration Centers for Laplace Angles"

   Siegel J, Fabrycky D. 2021, published in AJ.

2. "Analysis of XMM-Newton Observations of Supernova Remnant W49B and Clues to the Progenitor"

   Siegel J, Dwarkadas VV, Frank K, Burrows DN. 2020, published in ApJ.

1. "Smoothed particle inference analysis and abundance calculations of DEM L71, and comparison to SN explosion models"

   Siegel J, Dwarkadas VV, Frank K, Burrows DN, Panfichi A. Astron. Nachr. 2020; 1–7.

Articles

1. "Elemental Abundances in Supernova Remnant W49B as Clues to Its Progenitor"

   Siegel J, Dwarkadas VV, Frank K, Burrows DN. 2020, RNAAS

Abstracts

2. "SPI Analysis and Abundance Calculations of W49B"

   Siegel, J., Dwarkadas, V., Frank, K., & Burrows, D. 2020,in American Astronomical Society Meeting Abstracts,Vol. 236, American Astronomical Society Meeting Abstracts 236, 134.032

1. "SPI Analysis and Abundance Calculations of DEM L71 and W49B, and Comparison to SN explosion Models"

   Frank, K. A., **Siegel, J.**, Dwarkadas, V., Burrows, D. N., & Panfichi, A. 2020, in American Astronomical Society Meeting Abstracts, American Astronomical Society Meeting Abstracts, 377.02

Awards and Grants

College Research Fellows (Hoeft) Award | University of Chicago — November 2020 to June 2021

Chambliss Astronomy Student Award | 236th Meeting of the American Astronomical Society — June 2020

Micro-Metcalf Grant | University of Chicago — Spring 2020

Summer Action Grant | University of Chicago — June 2019

University Scholar Award | University of Chicago — 2018 to Present

Presentations

5. "High Precision Line-by-line Radial Velocity Analysis"

   California Institute of Technology Summer Seminar | Oral Presentation | August 2021

4. "Statistics of Exoplanet Resonant Chains"

   University of Chicago Undergraduate Research Symposium | Poster Presentation | Spring 2021

3. "Smoothed Particle Inference Studies of Supernova Remnant DEM L71"

   University of Chicago Research Symposium Proceedings | Oral Presentation | June 2020

2. "Smoothed Particle Inference Studies of Supernova Remnant Abundances"

   Midstates Consortium for Math and Science | Poster Presentation | November 2019
   UCISTEM Undergraduate Research Symposium | Poster Presentation | October 2019

1. Keynote Panelist

   UCISTEM Undergraduate Research Symposium | Keynote Panel and Workshop | October 2019

Teaching Assistant Experience

ASTR 205 | Introduction to Python Programming with Applications to Astro Statistics — Autumn 2020

ASTR 211 | Computational Techniques in Astrophysics — Spring 2021

Skills

Advanced knowledge of `python` programming

Proficient in `C`, `C++`, `HTML`, `CSS`, and `Bash` programming

Extensive experience with cluster computing

Additional Experience

Board Member | Society of Physics Students — March 2020 to Present

Student Coordinator | Taking the Next Step Conference — Sept. 2019 to Present

Writer | University of Chicago Chapter of Triple Helix — April 2019 to April 2020

Student | Tutorials on Mechanical Design for Scientific Apparatus — Summer 2019

Student | Experimental Particle Physics Reading Seminar — Winter 2019

References

Daniel Fabrycky | Associate Professor | University of Chicago
(773) 702-9562
fabrycky@uchicago.edu

Vikram Dwarkadas | Research Professor | University of Chicago
(773) 834-4668
vikram@astro.uchicago.edu

Kari Frank | Director of Operations of CIERA, Research Assistant Professor | Northwestern University
(847) 467-3178
kari.frank@northwestern.edu