VEDANT CHANDRA

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ORCID: 0000-0002-0572-8012 | Publications: NASA ADS

Professional Appointments

Research Intern, Space Telescope Science Institute (STScI) June, 2020–present
- Studying star formation in nearby galaxies with the Hubble Space Telescope

Research Assistant, Human Spaceflight Lab, JHU January, 2019–present
- Analyzing astronaut stress and performance during simulated spaceflight

Research Assistant, Department of Physics & Astronomy, JHU November, 2018–present
- Characterizing white dwarf stars with atmospheric models and spectroscopy

Education

Johns Hopkins University 2017–present
- B.S. Physics & Applied Mathematics, minor in Space Sciences

Awards & Honors

Chambliss Medal, American Astronomical Society 2021

Sigma Pi Sigma 2020

Summer Student Fellowship, JHU IDIES 2020

Provost's Undergraduate Research Award, JHU 2019

Dean's Undergraduate Research Award, JHU 2019

Dean's List 6/6 Semesters, JHU 2017-2020

Grant Allocations

STScI JWST Discretionary Fund ($42,740) 2020
- "The Initial Mass Function of Resolved Stellar Populations in the Local Group"
- PI: Mario Gennaro, Co-I: Vedant Chandra

Various Undergraduate Research Grants ($13,500) 2019-2020
- PI: Vedant Chandra, Co-Is: Nadia Zakamska, Hsiang-Chih Hwang

Selected Press Coverage

ScienceNews Magazine August, 2020
- "Paradoxically, white dwarf stars shrink as they gain mass"

JHU Press Release July, 2020
- "Johns Hopkins astrophysicists observe long-theorized quantum phenomena"

Invited Talks

Summer Symposium, Space Telescope Science Institute July, 2020
- "Fitting the Stellar Birth Function of Resolved Stellar Populations with Approximate Bayesian Computation", 19:30 onwards.

Summer Symposium, Space Telescope Science Institute August, 2019
- "White Dwarf Spectroscopy with Machine Learning", 21:00 onwards.

Annual Symposium, Maryland Space Grant Consortium July, 2019

- "White Dwarf Astronomy with Machine Learning".

Poster Presentations

237th Meeting of the American Astronomical Society January, 2021

- "Resolved Stellar Populations in the Era of JWST and Roman", iPoster

IDIES and MINDS Annual Symposium October, 2020

- "Hunting for Metal-Poor Main-Sequence Stars in SDSS", awarded Best Poster.

NASA HRP Investigators Workshop January, 2020

- "Multivariate Analysis of Human Health and Performance in Spaceflight Simulation"

IDIES Annual Symposium October, 2019

- "Characterizing White Dwarf Spectra with Neural Networks"

JHU DREAMS Conference April, 2019

- "Hunting for Binary White Dwarf Stars with Spectroscopic Analysis"

Observatory Allocations

As Principal Investigator:

Apache Point Observatory, Dual-Imaging Spectrograph, 3 half-nights 2021

- "A Survey of Runaway Donors to Type Ia Supernovae"

Apache Point Observatory, Dual-Imaging Spectrograph, 2 half-nights 2020

- "Time-resolved Radial Velocities of Massive White Dwarfs in Close Binary Systems"

As Co-Investigator:

Gemini Observatory, GMOS, 8 hours 2020

- "Discovery of mass-dependent gravitational redshifts in white dwarfs", PI: Hwang.

Apache Point Observatory, Dual-Imaging Spectrograph, 2 half-nights 2020

- "Gravitational redshifts of white dwarfs", PI: Hwang.

Undergraduate Research Mentorship

John Magardino (JHU P&A) Summer, 2020

- "Magnetic white dwarfs", co-advisor with Professor Nadia Zakamska

Felix Yu (JHU P&A) Summer, 2020

- "ML classification of WD spectra", co-advisor with Professor Nadia Zakamska

Rebecca Mosier (JHU Human Spaceflight Lab) 2019-2020

- "Feature extraction from physiological signals", co-advisor with Professor Mark Shelhamer

Jessica Nguyen (JHU Human Spaceflight Lab) 2019-2020

- "Heartrate variability from wearable sensors", co-advisor with Professor Michael Rosen

Teaching

Teaching Assistant, 360.133 Great Books at Hopkins, JHU Fall, 2018

Teaching Assistant, 171.101 General Physics I, JHU Summer, 2018

Service & Outreach

Member, Sloan Digital Sky Survey V	2020-Present
Head of Logistics, JHU MedHacks Hackathon	2018-2019
Volunteer, JHU Physics Spring Fair	2018-2019
Contributing Writer, space.stackexchange.com	2014-2018

Skills & Experience

- **Programming Environments:** Python, UNIX, IRAF/PyRAF, cluster computing
- **Research Experience:** White dwarfs, stellar binaries, resolved stellar populations, metal-poor stars
- **Techniques:** Stellar spectroscopy, signal processing, non-linear dynamics, (un)supervised machine learning, artificial neural networks, Bayesian simulations and inference
- **Supercomputer Experience:** Blue Crab cluster at the Maryland Advanced Research Computing Center

References

Professor Nadia L. Zakamska, Johns Hopkins University	(zakamska@jhu.edu)
Dr Mario Gennaro, Space Telescope Science Institute	(gennaro@stsci.edu)
Professor Kevin C. Schlaufman, Johns Hopkins University	(kschlaufman@jhu.edu)
Dr Yuan-Sen Ting, Institute for Advanced Study	(ting@ias.edu)
Professor Mark J. Shelhamer, Johns Hopkins University	(mshelhamer@jhu.edu)

Peer-Reviewed Publications

3. **Chandra, V.** & Schlaufman, K.C. 2021, "Searching for Low-mass Population III Stars Disguised as White Dwarfs", *The Astronomical Journal, 161, 197*

2. **Chandra, V.**, Hwang, H.-C., Zakamska, N.L. & Cheng, S. 2020, "A Gravitational Redshift Measurement of the White Dwarf Mass–Radius Relation", *The Astrophysical Journal, 899, 146*

1. **Chandra, V.**, Hwang, H.-C., Zakamska, N.L. & Budavari, T. 2020, "Computational Tools for the Spectroscopic Analysis of White Dwarfs", *Monthly Notices of the Royal Astronomical Society, 497, 2688*

Co-Authored Publications

1. Petrosky, E., Hwang, H.C., Zakamska, N.L., **Chandra, V.** & Hill, M. 2021, "Variability, periodicity and contact binaries in WISE", *Monthly Notices of the Royal Astronomical Society, in press*

Other Published Works

astrobites September, 2020

- "Measuring the White Dwarf Mass-Radius Relation using Thousands of Stars"