

Vedant Chandra

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Education

Johns Hopkins University 2017–present

- BS, Physics & Applied Mathematics, minor in Space Sciences

Research Positions

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

Awards & Honors

Chambliss Medal, American Astronomical Society 2021

- Awarded the Chambliss Astronomy Achievement Student Award at AAS 237

Sigma Pi Sigma, Department of Physics & Astronomy, JHU 2020

- Nominated to the national physics honors society for strong academic achievement

Summer Student Fellowship, JHU IDIES 2020

- Awarded a \$6000 grant for ongoing data-intensive research into metal-poor stars

Provost's Undergraduate Research Award, JHU 2019

- Awarded a \$3000 grant for ongoing research into white dwarf atmospheres

Dean's Undergraduate Research Award, JHU 2019

- Awarded a \$4500 grant for ongoing research into white dwarf binaries

Dean's List, JHU Krieger School of Arts & Sciences 2017-2020

- GPA above 3.5/4.0 for 6/6 semesters

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

Peer-Reviewed Publications

3. **Chandra, V.** & Schlaufman, K.C. 2021, “Searching for Low-mass Population III Stars Disguised as White Dwarfs”, *The Astronomical Journal*, *in press*
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

2. Petrosky, E., Hwang, H.C., Zakamska, N.L., **Chandra, V.** & Hill, M. 2021, “Variables, periodic variables and contact binaries in WISE”, *submitted to MNRAS*
1. Tang, S., **Chandra, V.**, Kashyap, A., Kilburn, W., Spencer, C., Mosier, R., Yaovatsakul, K., Nguyen, J., Sarma, M.S., Roberts, D. & Shelhamer, M.J. 2021, “Multivariate Analysis of Human Physiology and Performance in a Spaceflight Analog Environment”, *in preparation*.

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”

Other Published Works

astrobites

September, 2020

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

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, Double-Imaging Spectrograph, 3 half-nights

2021

- “A Survey of Runaway Donors to Type Ia Supernovae”

Apache Point Observatory, Double-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, Double-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
• “Heart rate variability from wearable sensors”, co-advisor with Professor Michael Rosen	

Teaching

Teaching Assistant, 360.133 Great Books at Hopkins, JHU	Fall, 2018
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Teaching Assistant, 171.101 General Physics I, JHU	Summer, 2018
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Outreach

Head of Logistics, JHU MedHacks Hackathon	2018-2019
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Volunteer, JHU Physics Spring Fair	2018-2019
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Contributing Writer, space.stackexchange.com	2014-2018
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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)
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Dr Mario Gennaro, Space Telescope Science Institute	(gennaro@stsci.edu)
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Professor Kevin C. Schlaufman, Johns Hopkins University	(kschlaufman@jhu.edu)
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Dr Yuan-Sen Ting, Institute for Advanced Study	(ting@ias.edu)
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Professor Mark J. Shelhamer, Johns Hopkins University	(mshelhamer@jhu.edu)
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