Curriculum Vitae
Chamani M. Gunasekera

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RESEARCH INTERESTS	Theoretical Astrophysics, Astrophysical Data Analysis and Numerical Simulations.
EDUCATION	**University of Kentucky** (UK), Lexington, KY USA PhD Candidate (Post-Qualified), Physics & Astronomy, expected graduation 2023 Masters, Physics & Astronomy, December 2021 Advisors: Gary Ferland, Marios Chatzikos & Renbin Yan **College of Saint Benedict & Saint John's University** (CSB/SJU), St Joseph, MN, USA BA, Physics & Mathematics, May 2017 Advisors: Jim Crumley
RESEARCH EXPERIENCE	**Graduate Research Assistantship**, UK, Summer 2021 - Spring 2022 Project: Processing Chianti Database version 10.0.1, to be compatible with Cloudy. Advisors: Gary Ferland & Marios Chatzikos **Graduate Research Assistantship**, UK, Fall 2020 – Fall 2021 Project: Understanding the discrepancy in the [O I] emission line intensity between MaNGA data and photoionization models. This project led to the study of selective element depletions onto dust particles in the atmosphere of interstellar matter (particularly H II regions), and incorporating new post-depletion abundance calculations into CLOUDY. Advisors: Gary Ferland, Marios Chatzikos & Renbin Yan **Graduate Research Assistantship**, UK, Spring 2019 - Fall 2020 Project Title: Analyzing source of Blazhko effect in RR Lyrae type variable stars. I utilized the MacAdam Observatory to obtain observations of Ru Pisces. This data was then processed and analyzed to look for period of pulsations, and any irregularities. Advisor: Ronald Wilhelm **Summer Research for Undergraduates**, CSB/SJU, Summer 2016 - Fall 2017 Project Title: Finding notable characteristics of solitary waves near Polar-Magnetopause crossing, using Polar, OMNI, ACE, and WIND satellite observations. Advisor: Jim Crumley
TEACHING EXPERIENCE	**Graduate Teaching Assistant**, Department of Physics & Astronomy, UK, Spring 2018 - Spring 2020 Responsibilities as Lab Teaching Assistant: instructing students through lab exercises and evaluating student work. Responsibilities as Recitation Teaching Assistant: helping students understand material presented in lecture, holding office hours, and evaluating student work. **Summer Graduate Course Assistant**, Department of Physics & Astronomy, UK, Summer 2019 Responsibilities as Lab Teaching Assistant: instructing students through lab exercises and evaluating student work. Responsibilities as Recitation Teaching Assistant: helping students understand material presented in lecture, holding office hours, and evaluating student work.

Undergraduate Teaching Assistant, Department of Mathematics, CSB/SJU, Fall 2015 - Spring 2017
Responsibilities as Teaching Assistant: Evaluating student work and tutoring students at the Mathematics resource center.

RESEARCH PUBLICATIONS

"Preparing Cloudy for high resolution X-ray in the microcalorimeter era: Fine-Structure splitting of nP energy levels."
Gunasekera, C. M., Chatzikos, M., Ferland, G., 2023 (In preperation)

"Self consistent grain depletions and abundances II: Effects on strong-line diagnostics of extragalactic H II regions"
Gunasekera, C. M, Ji, X., Chatzikos, M., Yan, R., Ferland, G., 2023. Monthly Notices of the Royal Astronomical Society. doi:10.1093/mnras/stad322

"Creating a CLOUDY Compatible Database with CHIANTI version 10 Data"
Gunasekera, C. M., Chatzikos, M., Ferland, G., 2022, Astronomy; 1(3):255-270. https://doi.org/10.3390/astronomy1030015

"Self-consistent grain depletions and abundances I: The Orion Nebula as a test case"
Gunasekera, C. M, Ji, X., Chatzikos, M., Yan, R., Ferland, G., 2022, Monthly Notices of the Royal Astronomical Society. doi:10.1093/mnras/stac022

RESEARCH TALKS & POSTER PRESENTATION

2023 - **Colloquium** at KAAS Kentucky Area Meeting, UK, Lexington KY
2022 - **iPoster** at 240th American Astronomical Society Meeting, Pasadena CA
2022 - **Colloquium** at Astronomy Seminar, UK, Lexington KY
2021 - **Colloquium** at Astronomy Seminar, UK, Lexington KY
2014 - **Poster** at Summer Research for Undergraduates, CSB/SJU, Collegeville MN

GRANTS RECEIVED

Spring 2021 - Spring 2023: NASA grant 19-ATP19-0188
Summer 2020 - Fall 2020: STScI (HST-AR-15018 and HST-GO-16196.003-A)

COMPUTER SKILLS

Languages: C++, Python, IDL, LaTeX.
Applications: Vi/Vim, Git, Spyder, Jupyter, Visual Studio
Operating Systems: Unix, Linux, Mac OSX, Windows.

ADDITIONAL SKILLS

Extensive experience in data reduction and visualization of massive simulation outputs.
Extensive experience in large database management.
Extensive experience in parallel computing and object oriented programming.
Extensive experience operating ground based telescope.
Experience in leading a research collaboration.

OTHER

Nominee for MacAdam Graduate Excellence Fellowship in Physics & Astronomy 2023, UK Nominee for MacAdam Graduate Excellence Fellowship in Physics & Astronomy 2022, UK

REFERENCES

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