ALEXANDER REEDY

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CAREER TARGET: GAME DESIGN

Self-directed offering a **MSc *in Astrophysics***, and **3+ years'** combined astronomy research experience in diverse settings including **NASA** and academia. Leverages strong foundation in physics and mathematics, combined with academic and professional computer programming (IDL, Python, Java, C++), project oversight, and first-person game design experience.

EDUCATION

Queen Mary University of London, London, UK
Master of Science (MSc), Astrophysics, 2019 – 2020
- Awarded **distinction** for all counted modules and dissertation work.

MSc Dissertation: "Optimized Unresolved Radio Foreground Mapping Using Poisson & Pseudo-Random Sampling"
- Developed novel **statistical analysis tools** for large data sets and integrated tools into existing **Python** analysis pipeline.
- Optimization efforts decreased computation times up to **~50%.**
- Demonstrated viability of foreground mapping techniques and established statistical framework for application of **Monte Carlo Method.**

Rowan University, Glassboro, NJ
Bachelor of Science (BS), Physics (Astronomy), 2011 – 2016

CORE SKILLS & ATTRIBUTES

Programming:

Development, Tooling, Optimization, Data Visualization, Mathematical & Scientific Programming

Statistical Analysis:

Poisson-Sampling, Pseudo-Random Sampling, Monte Carlo Method

Software:

Maya, Photoshop, Slack, MS Office Suite, Blender, Godot, Unity

Other:

Collaboration, Leadership, Analytical Problem Solving, Critical Thinking & Decision-making, Project Oversight & Management

PROFESSIONAL EXPERIENCE

OVERSIGHT ENGINEER, Jazz Semiconductor Trusted Foundry, Inc. (JTSF)   September 2018 – February 2019

Served in a co-project management and supervisory capacity, supporting semiconductor manufacturing operations for large aerospace and defense government contractors sector in a deadline-driven setting. Coordinated production schedules, monitored security levels, and interfaced with manufacturing and technical teams on front-end-of-line semiconductor device fabrication processing operations.

- Contributed to **increased productivity and organization** after designing an Excel spreadsheet that introduced a tracking method for locating reticles and other materials across the production site.

- Acknowledged by the President for performing the fastest, high-quality job—achieving **100% on time product delivery**—through continuous improvement and open communication channels.

RESEARCH ASSISTANT, NASA / Universities Space Research Association (USRA)   September 2017 – March 2018

Grant funded position to support NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) project. Developed and ran IDL algorithms to reduce and analyze data obtained from the SOFIA FIFI-LS instrument, assess the evolution of photo-dissociation regions (PDRs), and predict the formation of galaxies.

- **Second-authored** a NASA-SOFIA publication after performing an independent literature research to validate magnitudes by cross-calibrating FIFI-LS data with previously published results. Advanced future research, resulting in 2 additional abstracts and a presentation delivered at the 2019 AAS meeting.

- **Enabled further study** of galaxy formation by applying IDL and data visualization tools to plot spectral energy distribution (SED) sites, fit line intensities, and use PDR prediction models to derive density and UV-intensity maps in M17-SW molecular cloud complex.

'I valued his ability to work independently, his interest, and quick understanding behind the data.' ~ Dr. Randolf Klein, Science Outreach Lead (SOFIA/USRA) ~

RESEARCH ASSISTANT, Rowan *Extragalactic Astronomy & Cosmology Lab*   September 2015 – December 2016

Joined the Guerra research group to study variability in active-galactic nuclei through extensive photometric data collection, analysis, and interpretation using a 0.4m Cassegrain DFM telescope.

- **Boosted magnitude calculation speeds** by writing and testing Python and Java code along with data reduction and analysis software, enabling translation of theoretical hypotheses into applicable results.
- **Honed communication and public speaking skills** by presenting a technical poster, detailing research results, at Rowan University's 2016 STEM Symposium.

'Alex is hard working and mature. He [was] one of the few students who was trusted to operate the 0.4m telescope without direct guidance.' ~ Dr. Eddie Guerra, Associate Professor (Rowan University) ~

RESEARCH ASSISTANT, Rowan *Planetary Science & Computational Astronomy Lab*   January 2015 – March 2016

Accepted into the Klassen research group to analyze and process near-infrared spectral images of Mars, using Linux command environments, IDL programming, and principal component analysis to model surfaces and determine water content of the martian atmosphere.

- **Discovered and shared** a mathematical method, involving the N-finder algorithm that enabled greater identification, selection, and retrieval of endmembers within a 32-D space. This method **produced more reliable, consistent results** and is still in use within the research group to this day.
- **Enhanced presentation and networking skills** by engaging in the 2015/2016 Rowan STEM Symposiums and 2015 Sigma Xi Research Symposium at Saint Joseph's University in Philadelphia, PA.

'He is very determined, inquisitive, and even when working on low-level tasks he works to understand how those tasks support the overall program and big picture of the work.' ~ Dr. David Klassen, Professor, Department Chair (Rowan University) ~

PROFESSIONAL RECOGNITION

Klein, R., **Reedy, A.**, et al. (2019, January). *The PDR in M17 Analyzed with FIFI-LS Onboard SOFIA.* Presentation [not present]. 233rd meeting of the American Astronomical Society, Seattle, WA

Klein, R., **Reedy, A.** et al. (2019). *The PDR in M17 Analyzed with FIFI-LS Onboard SOFIA.* Manuscript in preparation.

Klein, R., Fadda, D., Krabbe, A., **Reedy, A.**, et al. (2018, August). *PDR Analysis with Far-Infrared Diagnostic Lines in M17-SW.* Abstract [ID E1.18-27-18] & Poster Presentation [not present] delivered at 42nd COSPAR Scientific Assembly, Pasadena, CA.

Klein, R., **Reedy, A.**, et al. (2018, January). *SOFIA/FIFI-LS Observations of Galactic PDRs.* Abstract & Poster Presentation [not present] delivered at 231st meeting of the American Astronomical Society, National Harbor, MD.

Reedy, A., Guerra, E. (2016, April). *Developing Baseline Broadband Photometry on Potentially Active Galaxy KUG 0012-000.* Abstract & Poster presented at 2016 STEM Symposium, Rowan University, Glassboro, NJ.

Reedy, A., Klassen, D. (2016, April). *Using Restricted Principle Component Analysis for Martian Surface Spectral Endmember Selection.* Abstract & Poster presented at 2016 STEM Symposium, Rowan University, Glassboro, NJ.

Reedy, A., Klassen, D. (2015, April). *Investigating Techniques to Model the Martian Surface Using PCA/TT.* Abstract & Poster presented at 2015 Sigma Xi Research Symposium, Saint Joseph's University, Philadelphia, PA.