SAMER J. EL-ABD

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EDUCATION

BS in Astronomy-Physics, University of Virginia — Aug 2014 - May 2018
Echols Scholar

MS in Astronomy, University of Virginia — Aug 2018 - May 2020
Advisor: Dr. Crystal Brogan

PhD Candidate in Astronomy, University of Virginia — May 2020 - Ongoing
Advisor: Dr. Crystal Brogan

PROJECTS

Undergraduate Research Assistant Charlottesville, VA — May - Aug 2015
Advisor: Dr. Shane Davis

- Developed Python code to study the spectral hardening of realistic black hole accretion disk spectral models to better inform the methods commonly used to fit observations as described in Davis & El-Abd (2019)

Undergraduate Research Assistant Charlottesville, VA — May - Aug 2016
Advisor: Dr. Shane Davis

- Developed Monte Carlo radiative transfer code in C in a variety of coordinate bases to aid models of black hole accretion disk spectra

Independent Study at the NRAO Charlottesville, VA — Sept - Dec 2016
Advisor: Dr. Crystal Brogan

- Studied publicly available MALT90 single dish survey data to analyze the spatial and kinematic structure of 12 molecules toward seven galactic massive protoclusters

Undergraduate Research Assistant Charlottesville, VA — May - Aug 2017
Advisor: Dr. Craig Sarazin

- Examined XMM-Newton X-Ray observations of galaxy cluster Abell 611 to determine the origin of previously observed shocks

Senior Thesis at the NRAO Charlottesville, VA — Aug 2017 - May 2018
Advisors: Dr. Crystal Brogan and Dr. Brett McGuire

- Analyzed ALMA spectroscopic data to identify and model the molecular composition of massive star-forming regions in the NGC 6334I galactic massive protocluster

Master's Thesis Charlottesville, VA — Aug 2018 - May 2020
Advisors: Dr. Crystal Brogan and Dr. Brett McGuire

- Continued work on the molecular composition of NGC 6334I and other star-forming regions which culminated in the publication El-Abd et al. (2019)
- Measured additional abundances of astrobiologically significant molecules in NGC 6334I

PhD Thesis Charlottesville, VA — May 2020 - Ongoing
Advisors: Dr. Crystal Brogan and Dr. Brett McGuire

- Developed a fitting routine that matches molecular spectra to astronomical observations. This work enables novel analysis techniques of star-forming regions as well as greatly accelerating the rate of production of scientific results

TEACHING

Instructor University of Virginia

- ASTR - The Origins of Almost Everything — July-Aug 2022

Teaching Assistant University of Virginia

- ASTR 1290 — Aug - Dec 2019
- ASTR 1220,1270 — Jan - May 2020
- ASTR 1220 — Aug - Dec 2020
- Telescope Observing Lab — Aug 2019 - May 2020

PRESENTATIONS

233rd American Astronomical Society Meeting Seattle, WA 2019

- *Interstellar Glycolaldehyde, Methyl Formate, and Acetic Acid: Remarkably Bi-Modal, Log-Linear Abundance Patterns in Star Forming Regions*

74th International Symposium on Molecular Spectroscopy Chicago, IL 2019

- *Interstellar Glycolaldehyde, Methyl Formate, and Acetic Acid: Remarkably Bi-Modal, Log-Linear Abundance Patterns in Star Forming Regions*

Radio/Millimeter Astrophysical Frontier in the Next Decade Charlottesville, VA 2019

- *Interstellar Glycolaldehyde, Methyl Formate, and Acetic Acid: Remarkably Bi-Modal, Log-Linear Abundance Patterns in Star Forming Regions*

241st American Astronomical Society Meeting Seattle, WA 2023

- *A New Approach for Automated Analysis of High-Resolution Molecular Line Surveys*

76th International Symposium on Molecular Spectroscopy Chicago, IL 2023

- *A Novel Approach for Automated Analysis of High-Resolution Molecular Line Surveys*

REFEREED PUBLICATIONS ADS

Hunter, T. R., Brogan, C. L., De Buizer, J. M., Towner, A. P. M., Dowell, C. D., MacLeod, G. C., Stecklum, B., Cyganowski, C. J., **El-Abd, S. J.**, and McGuire, B. A. *The Extraordinary Outburst in the Massive Protostellar System NGC 6334I-MM1: Strong Increase in Mid-Infrared Continuum Emission.* 2021, The Astrophysical Journal Letters 912, L17.

Ligterink, N. F. W., **El-Abd, S. J.**, Brogan, C. L., Hunter, T. R., Remijan, A. J., Garrod, R. T., and McGuire, B. A. *The Family of Amide Molecules Towards NGC 6334I.* 2020, The Astrophysical Journal 901, 37.

El-Abd, Samer J., Brogan, Crystal L., Hunter, Todd R., Willis, Eric R., Garrod, R. T., and McGuire, B. A. *Interstellar Glycolaldehyde, Methyl Formate, and Acetic Acid I: A Bi-modal Abundance Pattern in Star Forming Regions.* 2019, The Astrophysical Journal 883, 129.

McGuire, B. A., Shingledecker, C. N., Willis, E. R., Lee, K. L. K., Martin-Drumel., M.-A., Blake, G. A., Brogan, C. L., Burkhardt, A. M., Caselli, P., Chuang, K.-J., **El-Abd, S. J.**, Hunter, T. R., Ioppolo, S., Linnartz, H., Remijan, A. J., Xue, C., and McCarthy, M. C. *Searches for Interstellar HCCSH and H_2CCS.* 2019, The Astrophysical Journal 883, 201.

Davis, S. W. & **El-Abd, S. J.**. *Spectral Hardening in Black Hole Accretion: Giving Spectral Modelers an f.* 2019, The Astrophysical Journal 874, 23.

McGuire, B. A., Shingledecker, C. N., Willis, E. R., Burkhardt, A. M., **El-Abd, S. J.**, Motiyenko, R. A., Brogan, C. L., Hunter, T. R., Margulès, L., Guillemin, J-C., Garrod, R. T., Herbst, E., and Remijan,

A. J. *ALMA Detection of Interstellar Methoxymethanol (CH_3OCH_2OH).* 2017, The Astrophysical Journal Letters 851, L46.

SOFTWARE SKILLS

Languages	Python, C
Tools	CASA, DS9, LaTeX, aplpy, Git

SERVICE AND OUTREACH

Graduate Admissions Committee for UVA's Astronomy Department Jan - Apr 2022

Dark Skies Bright Kids Aug 2019 - May 2020

Public Nights at McCormick and Fan Mountain Observatories 2018 - 2020