

**Erik B. Monson, Ph.D.**

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## Education

- **Ph.D.: Physics**, 2023, University of Arkansas  
*Thesis: Insights Into Star Formation and AGN Activity in Protocluster Environments from Morphological Studies and SED Fitting*, advised by Dr. Bret Lehmer
  - **B.S.: Physics and Mathematics**, 2017, University of Arkansas, Summa Cum Laude
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## Work History

- **Postdoctoral Scholar**: *Chandra* ACIS team, Penn State University Department of Astronomy and Astrophysics, August 2023 - Present
  - **Research Assistant**: Lehmer group, University of Arkansas Department of Physics, Spring 2020 - August 2023
  - **Teaching assistant**: University of Arkansas Department of Physics, Fall 2017 - Fall 2019
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## Proposals

- **Co-I**: "A Treasury Survey Probing the Baryon & Energy Cycle and X-ray Binary Evolution in Galaxies at High Angular Resolution" *Chandra Legacy Program*, PI: Smita Mathur
  - **Co-I**: "PHANGS-Chandra: A Legacy Survey for Detailing the First Billion Years of X-ray Evolution in Galaxies" *Chandra GO*, PI: Bret Lehmer
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## Fellowships and Awards

- **University of Arkansas Doctoral Academy Fellowship**, 2017-2022
- **Outstanding Service Project**, University of Arkansas, 2020
- **Honors Fellowship**, University of Arkansas, 2013-2017

## Service and Outreach

- **Astronomy On Tap State College:** speaker, 2024
  - **Penn State University AstroFest and AstroNight:** volunteer and presenter, 2023-2024
  - **University of Arkansas SPACE Hogs:** organizer, volunteer, planetarium coordinator and presenter, 2018 - 2023. Vice President 2020-2022
  - **Referee:** *Astronomy & Astrophysics*
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## Skills and Professional Experience

- **Open Source:** I have experience leading and contributing to small-team open source projects, including experience with `git` and hosting solutions including `github` and `readthedocs`.
  - **Python & IDL:** I have more than ten years of computer programming experience in a variety of languages. Extensive use of both Python and IDL, including the development and documentation of `Lightning`, an IDL-based code for fitting galaxy spectral energy distributions (SEDs), and its Python successor, `lightning.py`.
  - **Cluster & cloud computing:** I have used cluster computing throughout my career to optimize tasks like SED fitting and 2D galaxy modeling.
  - **Bayesian data analysis & forward modeling:** I have extensive experience using Bayesian methods for forward modeling of galaxy SEDs and X-ray spectra.
  - **Proposing:** I have experience contributing to *Chandra*, *JWST*, and NASA ADAP proposals. I am comfortable with a variety of proposal planning tools, including the *Chandra* proptools, *JWST* ETC, and *HST* ETC. I also have experience raising grant funds and private donations for outreach programs.
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## Professional References

### **Prof. Bret Lehmer**

Associate Professor  
University of Arkansas  
Department of Physics  
lehmer [at] uark [dot] edu  
*Thesis advisor and collaborator*

### **Prof. Eric Feigelson**

Distinguished Senior Scholar and Professor  
Penn State University  
Department of Astronomy and Astrophysics  
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*Postdoc mentor*

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**Dr. Rafael Eufrazio**

Data Scientist

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*Collaborator*

**Prof. Daniel Kennefick**

Professor

University of Arkansas

Department of Physics

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*Mentor, undergraduate advisor*

**Prof. Julia Kennefick**

Associate Professor

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*Mentor, teaching and outreach*

## List of Publications

Lsted in reverse chronological order, with the most important publications marked with a **\***.

### First Author

- ★ **Monson, E.B.**, et al. (2023). Revisiting the Properties of SSA22 X-ray AGN with LIGHTNING. *ApJ*, 951(1), 15. doi:10.3847/1538-4357/acd449
- ★ **Monson, E.B.**, et al. (2021). On the Nature of AGN and Star Formation Enhancement in the  $z = 3.1$  SSA22 Protocluster: The HST WFC3 IR View. *ApJ*, 919(1), 51. doi:10.3847/1538-4357/ac0f84

### Second Author

- ★ Lehmer, B.D., **Monson, E.B.**, et al. (2024). An Empirical Framework Characterizing the Metallicity and Star-Formation History Dependence of X-ray Binary Population Formation and Emission in Galaxies. *ApJ*, in press. arxiv:2410.19901
- ★ Doore, K., **Monson, E.B.**, Eufrasio, R.T., and Lehmer, B.D. (2023). LIGHTNING: A Lightning Fast X-ray to Far-Infrared Galaxy Spectral Energy Distribution Fitting Code. *ApJS* 266(2), 39. doi:10.3847/1538-4365/accc29

### Contributing Author

- Umehata, H. et al. (incl. **Monson, E.B.**) (2024). ADF22-WEB: A giant barred spiral starburst galaxy in the  $z = 3.1$  SSA22 protocluster core. *PASJ*, submitted. arxiv:2410.22155
- Doore, K., et al. (incl. **Monson, E.B.**) (2022). The Impact of Inclination-dependent Attenuation on Ultraviolet Star Formation Rate Tracers. *ApJ* 931(1), 53. doi:10.3847/1538-4357/ac67e8
- Abdeen, S., et al. (incl. **Monson, E.B.**) (2022). Evidence in favour of density wave theory through age gradients observed in star formation history maps and spatially resolved stellar clusters. *MNRAS* 512(1), 366-377. doi:10.1093/mnras/stac459
- Doore, K., et al. (incl. **Monson, E.B.**) (2021). On the Impact of Inclination-dependent Attenuation on Derived Star Formation Histories: Results from Disk Galaxies in the Great Observatories Origins Deep Survey Fields. *ApJ*, 923(1), 26. doi:10.3847/1538-4357/ac25f3
- Abdeen, S., et al. (incl. **Monson, E.B.**) (2020). Determining the co-rotation radii of spiral galaxies using spiral arm pitch angle measurements at multiple wavelengths. *MNRAS*, 496(2), 1610-1619. doi:10.1093/mnras/staa1596

- Lehmer, B.D., et al. (incl. **Monson, E.B.**) (2020). X-Ray Binary Luminosity Function Scaling Relations in Elliptical Galaxies: Evidence for Globular Cluster Seeding of Low-mass X-Ray Binaries in Galactic Fields. *ApJS*, 248(2), 31.  
doi:10.3847/1538-4365/ab9175
- Miller, R., et al. (incl. **Monson, E.**) (2019). Investigating the Origins of Spiral Structure in Disk Galaxies through a Multiwavelength Study. *ApJ*, 874(2), 177.  
doi:10.3847/1538-4357/ab0d26

### Contributed Talks and Posters

- **Monson, E.B.**, (2023, January). *Revisiting the Properties of X-ray AGN in the SSA22 Protocluster with Lightning* [Oral Presentation]. AAS 241. In *BAAS* 55(2).  
ads:2023AAS...24131001M
- **Monson, E.B.**, (2022, June). *Extracting the Star Formation Histories of SSA22 Protocluster AGN with Lightning* [Interactive Poster]. AAS 240. In *BAAS* 54(6).  
ads:2022AAS...24010122M
- **Monson, E.B.**, (2021, June). *The HST WFC3 IR View Of LBGs In The SSA22 Protocluster* [Interactive Poster and Oral Presentation]. AAS 238. In *BAAS* 53(6).  
ads:2021AAS...23833106M
- **Monson, E.B.** (2020, January). *Examining the Growth of Black Holes in the Protocluster Environment at  $z = 3.1$ : The HST WFC3 IR View of Galaxies in the SSA22 Protocluster* [Poster]. AAS 235. In *BAAS*, 52(1). ads:2020AAS...23537119M