

Luzian Rhys Seeburger

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SUMMARY

3rd year PhD student at the Max Planck Institute for Astronomy in Heidelberg, researching dormant black holes in close binaries. Interested in Statistics and Machine Learning, and their application to large datasets in Astronomy. Keenly engaged in Science Education and Communication and always willing to share my passion for Astrophysics with others.

EDUCATION

- **Max Planck Institute for Astronomy & Heidelberg University** Heidelberg, Germany
IMPRS Fellow, PhD Candidate - Astronomy September 2021 - current
- **University of Edinburgh** Edinburgh, United Kingdom
Master of Physics - Astrophysics; First Class September 2016 - June 2021
- **Sacre Coeur Wien** Vienna, Austria
Matura; Average: 1.0 September 2008 - June 2016

HONORS AND AWARDS

- Emerson Prize (highest grades out of all graduating Astrophysics students) - 2020/21
- Integrated Masters Medal for Astrophysics - 2020/21
- Edinburgh Award (Sports Union Volunteer) - 2020/21
- Edinburgh Award (Leadership in Student Opportunities) - 2020/21
- Senior Honours Medal for Astrophysics - 2019/20
- Edinburgh Award (Student's Association: Representing Students) - 2019/20
- Edinburgh Award (Work Experience) - 2019
- Certificate of Merit for pre-honours in Astrophysics, Year 2 - 2017/18

EXPERIENCE

- **Tutoring - Advanced Physics Lab for Physicists** Heidelberg University
F30 - Stellar CCD photometry May 2021 - November 2022
- **Summer Research Project** University of Edinburgh
"The No-U-Turn sampler in Hamiltonian Monte Carlo using JAX" July 2021 - August 2021
- **Ogden Trust Teach Physics Internship** Impington Village College
Including lesson planning, tutoring, small-group teaching June 2021 - July 2021
- **MPhys Project** University of Edinburgh
"Weak Lensing Cosmology with Deep Learning" September 2020 - May 2021
- **Royal Society of Edinburgh Cormack Vacation Scholarship** University of Edinburgh
"Linking Microbial Activity to Planetary Spectra" May 2020 - October 2020
 - **Findings presented:** Higgins et al. "Nutrients, Maintenance, Energy and Growth: predicting habitability, biomass and biosignatures from limited datasets" AGU Fall Meeting 2020
 - **Awarded to three Astronomy students each year across Scotland**
 - **Report awarded with "Best Report" prize by the committee for that year**
- **Telescope Group Project** University of Edinburgh
"Determining the properties of the transiting exoplanet TrES-2b and its host star" September 2019 - March 2020
- **Science Education Placement** Stewart's Melville College
"The effect of Specific Gestures on Learning Physics" September 2019 - December 2019
- **Carnegie Vacation Research Scholarship** University of Edinburgh
"The effect of Priors on Cosmological Analysis" May 2019 - August 2019
 - **Findings presented:** Royal Observatory Edinburgh Summer Student Presentations, August 2019
 - **Awarded to 100 students across all disciplines each year across Scotland**

SKILLS SUMMARY

- **Languages** Python (Advanced), Bash, C++, Julia (Basic)
- **Tools & IDEs** Git, Anaconda, Docker, WSL, VSCode, Atom, Spyder
- **IT - general** Machine Learning (Scikit, PyTorch), High Performance Computing, Microsoft Office & OpenOffice
- **Soft Skills** Leadership, Scientific Writing, Public Speaking

PUBLICATIONS

- El-Badry, K., Rix, H. W., Cendes, Y., Rodriguez, A. C., Conroy, C., Quataert, E., ... **Seeburger, R.**, ... Faigler, S. (2023). A red giant orbiting a black hole. *Monthly Notices of the Royal Astronomical Society*, 521(3), 4323-4348.. A red giant orbiting a black hole. arXiv preprint arXiv:2209.06833.
- El-Badry, K., Rix, H. W., Quataert, E., Howard, A. W., Isaacson, H., Fuller, J., ... **Seeburger, R.**, Almada, S., & Wojno, J. (2022). A Sun-like star orbiting a black hole. arXiv preprint arXiv:2209.06833.
- El-Badry, K., **Seeburger, R.**, Jayasinghe, T., Rix, H. W., Almada, S., Conroy, C., Price-Whelan, A.M. Burdge, K. (2022). Unicorns and Giraffes in the binary zoo: stripped giants with subgiant companions. *Monthly Notices of the Royal Astronomical Society*, 512(4), 5620-5641.
- **Seeburger, R.**, Higgins, P., Whiteford, N., Cockell, C. (subm.) Linking Microbial Activity to Planetary Spectra: CH4 Biosignatures on an Archean-Earth-like Exoplanet
- **Seeburger, L.** (2022) Wolkig mit Aussicht auf Edelsteinregen. *Sterne und Weltraum*, 08/22
- **Seeburger, L.** (2022) 5000 Augen erfassen die größte Galaxienkarte der Welt. *Sterne und Weltraum*, 07/22
- **Seeburger, R.**, et. al. (in prep.) Disentangling Composite Spectra

FURTHER INTERESTS

- **Education, Outreach and Tutoring**
 - **MPIA Outreach Fellow** 2022-current
 - **"Tag der Naturwissenschaften" (Science Day) at Experimenta Heilbronn - Guest Scientist** 2022
 - **Taught Python to Ukranian Visiting Scientist** 2022
 - **100 Hours for Astronomy - Presentation for MPIA** 2021
 - **Physics Outreach Team Volunteer** 2021
 - **Peer Support Leader, Physics Peer Mentoring Scheme** 2019/20
- **Representation and Leadership**
 - **IMPRS generation Representative** 2021 - current
 - **School Convener for School of Physics and Astronomy** 2020/21
 - **Chair for Staff Student Liaison Committee** 2020/21
 - **Student Representative for Degree Year Group** 2020/21
- **Activism**
 - **Organised LGBT+ Lunch meetings at School of Physics and Astronomy** 2020/21
 - **Member of Edinburgh University Sports Union Inclusion Committee** 2020/21
 - **Delegate for UofE for NUS LGBT+ Conference in Edinburgh** 2018
 - **Participated in LGBTYS Youth Summit (Falkirk) and NTC (Durham)** 2016/17
- **Theatre**
 - **Technical Manager and Assistant roles for multiple Student Theatre Productions** 2018-2021