Laura Elina Uronen

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Science Centre North Block, The Chinese University of Hong Kong, Shatin, HONG KONG

Research Interests

My research focuses on multi-messenger gravitational-wave lensing. Using Bayesian inference, I work mainly in identifying GW strong lensing and in building methods to combine dark siren GW observations with EM information for multi-messenger science.

Education

The Chinese University of Hong Kong *2023 – Present*
Ph.D. in Physics
Supervised by Prof Otto Hannuksela, Prof Justin Janquart.

University of St Andrews *2018 – 2023*
Integrated MPhys in Astrophysics (Hons), First Class
Supervised by Prof. Andrew Collier Cameron, Dr. Tom Wilson.
Thesis: *Partial eclipse of the heart for HD 181793.*

Experience

GOLUM Co-Lead *2023 – Present*
LIGO Scientific Collaboration
Co-lead and analyst/developer for the GOLUM GW lensing parameter estimation pipeline.

- Run, verify and review GOLUM PE analyses of real LVK data in O4;
- Build, test and implement new features;
- Provide regular status and analysis reports to the working group;
- Handle the communications with reviewers and the code review process;
- Manage day-to-day operations of the pipeline;
- Work closely with other pipelines and members of the Lensing working group to coordinate analysis efforts.

UG project mentor *2024 – Present*
The Chinese University of Hong Kong
Mentor an undergraduate student through summer & final-year project on GW lensing.

Teaching Assistant *2023 – Present*
The Chinese University of Hong Kong
Course: PHY1110 Engineering Physics.

- Teach weekly exercise and tutorial classes for 10-40 students;
- Maintain weekly consultation hours and one-on-one student mentoring, answer student queries;
- Mark homework assignments;
- Assist with examinations, invigilation and marking.

Publications

Finding black holes: an unconventional multi-messenger *Accepted*
Laura Uronen, Tian Li, et al., Phil. Trans. A, *arXiv*.

What is the nature of GW230529? An exploration of the gravitational lensing hypothesis *2025*
Justin Janquart **et al.**, *MNRAS*.

Dynamical mass determination and partial eclipses of the heartbeat star HD 181793 *2024*
Laura Uronen, Andrew Collier Cameron, Tom Wilson, *MNRAS*.

Skills

Languages: Native/fluent in English, Finnish, French; conversational in Spanish; basic Mandarin Chinese, German.
Coding languages: Python, FORTRAN, LaTeX.
Software/packages: Experience with GOLUM, bilby, lenstronomy, allesfitter, astropy.
Developer tools: VSCode, GitHub/GitLab.

Awards

Hong Kong PhD Fellowship Award *2023*
Research Grants Council
Vice Chancellor's HKPFS Scholarship *2023*
The Chinese University of Hong Kong
Student Staff Council Vacation Award *2023*
University of St Andrews
Deans' List *2019 – 2021*
University of St Andrews

Presentations

Contributed talks

- Royal Society Meeting for Gravitational Lensing, *Manchester, UK* 2024
- Cosmic Frontiers Workshop, *HKSAR* 2023

Posters

- LVK F2F Meeting, *Toyama, Japan* 2023
- Rubin Strong Lensing Workshop, *Oxford, UK* 2024

Department seminars & group presentations
University of Glasgow, University of Portsmouth, University of Amsterdam, Leiden University, UCLouvain.

Outreach

- Organizing committee, CUHK Postgraduate Physics Society *2023 – Present*
- Various roles, University of St Andrews Physics Society *2019 – 2023*
- Physics Class Representative, University of St Andrews *2021 – 2022*
- School Ambassador, University of St Andrews *2019 – 2023*