Peter Pihlmann Pedersen

Astrophysicist, Research Software & Hardware Engineering

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POSITIONS

Postdoctoral Researcher — **ETH Zurich** Switzerland
2022 – now

- Developing robotic observatory control software, hardware, data processing/visualization tools for SPECULOOS and the ETH observatory
- Leading advancements in high-precision near-infrared photometry and instrumentation to detect and characterise new exoplanets
- Supervising Masters research projects (5 completed)

Co-founder — **open-seneca** United Kingdom
2018 – now

- Engineered air quality monitoring networks – developed core aspects of the hardware, software, and data analysis
- Led international collaborative projects, with a focus on the Global South

EDUCATION

PhD — **University of Cambridge** United Kingdom
2018 – 2022
Near-infrared instrumentation for robotic exoplanet transit surveys
Supervisor: Didier Queloz

Masters — **University of Cambridge** United Kingdom
2017 – 2018
Sensing Technologies
Electives: Embedded Systems, Computer Vision and Robotics, Image Processing and Image Coding, Electronic Sensors and Instrumentation

SELECT COMMUNICATIONS

706 citations h-index 15

Talk — **United Nations Headquarters** New York, USA
2024
Innovations in air quality monitoring

Talk — **Massachusetts Institute of Technology** Boston, USA
2024
Detection of exoplanets using ground-based near-infrared instrumentation and robotic observatory systems

Paper — **Infrared photometry with InGaAs detectors** SPIE
2024
P P. Pedersen, D Queloz, L Garcia, *et al.*
Designed, modelled, and integrated a novel near-infrared instrument, reducing white and red photometric noise over traditional systems.

Paper — **Detection of an Earth-sized exoplanet** Nature Astronomy
2024
M Gillon, P P. Pedersen, B V. Rackham, *et al.*
Discovery of one of the most promising rocky exoplanets for detailed emission spectroscopy characterization with JWST.

Paper — **Precise near-infrared photometry, accounting for water vapour** MNRAS
2023
P P. Pedersen, C A. Murray, D Queloz, *et al.*
Significantly increased the accuracy of ground-based light curves by removing atmospheric induced variability, in post. Enabling a RMS reduction of 53.8%.

SKILLS

Technical
Python ●●●●● Git ●●●●○ Docker ●●●●○ Linux ●●●●○
NextJS ●●●●○ PHP ●●●●○ SQL ●●●●○ CAD-CAM ●●●●○
Embedded Systems ●●●●○ ASCOM drivers ●●●●●

Additional

- Strong teamwork, leadership, and project management skills
- Spanish (C1 proficiency)
- Open-source, hackathons, and rapid prototyping