

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
- Bachelor + Masters** **University of Manchester** [United Kingdom](#)
2013 – 2017
Physics, First Class Honours
Electives: Maths of Waves and Fields, Advanced Dynamics, Wave Optics

SELECT COMMUNICATIONS

725 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 ●●●●○ NextJS ●●●●○
 PHP ●●●●○ SQL ●●●●○ CAD-CAM ●●●●○ Embedded Systems ●●●●○
- Additional
- Strong teamwork, leadership, and project management skills
 - Spanish (C1 proficiency)
 - Open-source, hackathons, and rapid prototyping