Evert Nasedkin, PhD

Curriculum Vitae

Dublin, IE Meb: nenasedk.github.io Nationality - Canadian

Through my training as an astronomer I have gained extensive experience in scientific data analysis, modelling of physical processes, open-source software development, and in the communication of complex results to a variety of audiences.

Experience

2024-Now	 Postdoctoral Fellow, School of Physics, Trinity College Dublin, Dublin, IE. Implemented time-resolved retrieval framework for brown dwarf atmospheres.
	 Co-authored multiple high-impact publications, presented findings at premier interna- tional conferences, and organised media releases for key results.
	• Member of the scientific organising committee for a session at the European Astro- nomical Society meeting.
2020-2024	 PhD Candidate, Max Planck Institute for Astronomy, Heidelberg, DE. Developed novel atmospheric retrieval framework for exoplanet atmospheres as part of open-source petitRADTRANS package.
	 Obtained and analysed large high-contrast imaging datasets using a range of python- based image processing tools.
	 Published 3 first-author papers, presented results at 11 international conferences. Organised multiple workshops and seminars with an international audience. Served as PhD student representative, led efforts to improve student onboarding processes and access to resources.
09-12 2019	 Semester Project, Institute for Astronomy, ETH Zürich, Zürich, CH. Processed and visualised 3D hydrodynamic simulations of planet formation.
05-08 2017	 Research Assistant, Institute for Astronomy, ETH Zürich, Zürich, CH. Designed and performed mechanical tests at cryogenic conditions for astronomical instrumentation.
08-12 2016	 Research Assistant, <i>nEXO Collaboration</i>, McGill University, Montreal, QC. Simulated and assembled test source for the nEXO neutrino experiment.
2015-2016	 Research Assistant, <i>DEAP-3600 Dark Matter Search</i>, SNOLAB, Sudbury, ON. Implemented and automated analyses for characterising detector behaviour.
2014-2016	 Aerodynamics Team Member, FSAE Student Design Team, Waterloo, ON. Performed computational fluid dynamics experiments; assisted with manufacturing of aerodynamic systems.
	Education
2020-2024	Dr. Rer. Nat., Astronomy , University of Heidelberg, Heidelberg, DE, Max Planck Institute for Astronomy, Heidelberg, DE. Dissertation: "Atmospheric Characterisation of Directly Imaged Exoplanets".
2018–2020	MSc, Physics , ETH Zürich, Zürich, CH. Thesis: "Sub-Stellar Atmospheres in the Mid-Infrared".
2013-2018	BSc, Honours Co-operative Physics, University of Waterloo, Waterloo, ON.

Selected Publications

Nasedkin et al. "The JWST Weather Report: retrieving temperature variations, auroral heating, and static cloud coverage on SIMP-0136", submitted A&A, (2025).

Hoch et al. "Silicate clouds and a circumplanetary disk in the YSES-1 exoplanet system", Accepted Nature, (2025).

Nasedkin et al. "Four-of-a-kind? Comprehensive atmospheric characterisation of the HR 8799 planets with VLTI/GRAVITY", A&A, 687, A298 (2024).

Nasedkin, Mollière, and Blain "Atmospheric retrievals with petitRADTRANS", JOSS 9, 96, 5875 (2024).

Nasedkin, et al. "Impacts of high-contrast image processing on atmospheric retrievals", A&A, 678, A41 (2023).

Vasist et al. "Neural posterior estimation for exoplanetary atmospheric retrieval", A&A, 672, A147 (2023).

Patapis, **Nasedkin** et al. "Direct emission spectroscopy of exoplanets with the medium resolution imaging spectrometer on board JWST MIRI. I. Molecular mapping and sensitivity to instrumental effects", A&A, 658, A72 (2022).

Computing Experience

Projects

petitRADTRANS

Codeveloper of widely used pRT package (>300 citations). Wrote module to perform atmospheric retrievals on directly imaged and transiting exoplanets. https://gitlab.com/mauricemolli/petitRADTRANS

Data reduction for IFUs

Developed pipelines to streamline the post-processing of high-contrast hyperspectral data using state-of-the-art algorithms.

PACO

Contributed a python implementation of the PAtch COvariance (PACO) PSF subtraction algorithm to the open-source VIP-HCI package.

Computing Resources

- **HPC** Extensive experience using the SLURM based VERA and VIPER clusters (MPCDF).
- **Tools** Use of Linux, Mac, and Windows, together with bash scripting and command line interface.
 - git Version control, automated testing, and package release via PyPI.

Programming Languages

- **Python** Expert Open source design and development, extensive use of scientific and data analysis packages (numpy, scipy, JAX, pytorch, scikit-learn, pandas).
- **Fortran** Intermediate Contributed to pRT radiative transfer backend.
 - **C++** Intermediate Automated analysis for DEAP-3600 detector characterisation.

Languages

English: Native speaker. Spanish: A2. German: A1.

Personal Interests

Photography, Cycling, Triathlon, Music, Hiking.