

Louise Dyregaard Nielsen

Oxford University
Keble Rd. OX1 3RH
Oxford, United Kingdom

Phone: +49 (0) 1590 16 50 231

E-mail: Louise.Nielsen [at] unige.ch

Born 1988 in Denmark

Website: <https://louisedyregaard.github.io/>

SNSF fellow at Oxford University

Snapshot of planet evolution: overcoming stellar noise to characterise young systems. Swiss National Science Foundation fellow, working on mitigating and modelling stellar activity in radial velocity time series of young stars harbouring transiting planets. March 2021 - present.

Education

- 2017 Feb - PhD in astrophysics, Geneva Observatory at Geneva university, Switzerland. Thesis: 2021 Feb *Density of Exoplanets*. Supervisor: prof. François Bouchy.
- 2011 Sep - Master of Science with specialisation in astrophysics, the Niels Bohr Institute at 2015 Mar Copenhagen University, Denmark. Thesis: *Probing Kinematic and Thermal Properties of the Very Low Luminosity Object DC2742-04-IRS*, supervisor: prof. Jes Jørgensen.
- 2008 Sep - Bachelor of Physics with specialisation in Astronomy, The Niels Bohr Institute at 2011 Jun Copenhagen University, Denmark.

Employment history

- 2015 Oct - **Young Graduate Trainee at the European Space Agency**, ESTEC, the 2016 Dec Netherlands. Developing an exposure time calculator dedicated to transiting exoplanet observations with NIRSpec on the James Webb Space Telescope. Supervisor: Pierre Ferruit.
- 2015 May - **Research Intern at the Gemini Observatory**, Hawaii. Reducing and processing 2015 Sep spectra of high redshift galaxies. Supervisor: Inger Jørgensen.
- 2014 Mar - **Student support astronomer at the Nordic Optical Telescope**, Spain. Planning 2015 May and performing observations, supporting visiting astronomers, software development and instrument maintenance.
- 2013 Aug - Research assistant at the Detector Group, University of Copenhagen, Denmark. 2014 Mar Testing and characterizing CCDs and overall camera performance for astronomical use.
- 2010 Apr - Laboratory instructor and teaching assistant at The University of Copenhagen. Taught 2014 Jun Classical Mechanics and Electrodynamics.

Published work

5 first author papers, 83 additional publications. H-index 17.

Full list can be found at the ADS:

https://ui.adsabs.harvard.edu/public-libraries/NitFdYS2Q2OuJ_TZLSQsag
and ORCID 0000-0002-5254-2499.

Approved research projects

As principle investigator

SNSF Early Postdoc.Mobility, Feb 2021, 18 month fellowship, grant no. P2GEP2_200044.

Fraunhofer fellowship, 2021, 2+3 year fellowship at Ludwig-Maximilians-Universität Munich. Turned down.

ESO research fellowship, 2021, 3 year fellowship at European Southern Observatories. Take up duty Dec 2021.

Exploring the transition between ice- and gas giant exoplanets

12 nights on HARPS-ESO3.6m, 2020 + 2021, prog. 105.20FX & 106.216H.

Understanding giant planet formation through precise mass measurements of TESS planets

6 nights on HARPS-ESO3.6m, 2019, prog. 0103.C-0874.

Accurate Mass Determination of Bloated Saturns from the WASP-south Survey

5 nights on HARPS-ESO3.6m, 2019, prog. 0102.C-0414.

As co-investigator

Too Hot to Handle: TOI-824b, a young, highly irradiated Neptune along the edge of the desert

8 hr on ESPRESSO-VLT, 2020, prog. 106.20ZR.

SPICED: a Spectroscopic Inquiry of Close-in Exoplanets below the Desert

20 hr on ESPRESSO-VLT, 2020, prog. 106.20ZL.

Exploring the properties of warm mini-Neptunes revealed by TESS

68 hr on ESPRESSO-VLT, 2020, prog. 105.20P7.

Characterizing properties of TESS long-period giant planets

7.2 nights on HARPS-ESO3.6m, 2020, prog. 0105.C-0809.

NGTS-HARPS Program: Short, Young, and Cool

6.3 nights on HARPS-ESO3.6m, 2020, prog. 105.20G9.

Atmospheric escape in the young transiting planet DS Tuc A b

5 Orbits, STIS - Hubble Space Telescope, 2020, Cycle 27.

Naked Cores: Exploring the internal structure of planets with HARPS

72 nights on HARPS-ESO3.6m, 2018-2020, prog. 1102.C-0249.

Probing the transition between ice giants and gas giants with the NGTS Survey

16 nights on HARPS-ESO3.6m, 2017-2019, prog. 0101.C-0623, 0103.C-0719 & 0104.C-0588.

Characterising Hot Neptunes and Super-Earths from the NGTS Survey

6.1 nights on HARPS-ESO3.6m, 2017, prog. 0100.C-0474.

Talks and Seminars

- ★ TESS Science conference II, July 2021, Pasadena/online.
Poster: Spectroscopic vetting of TESS planet candidates with CORALIE on the Swiss 1.2m telescope.
- ★ KIPAC Tea series at Stanford University, May 2021, online.
Invited talk: Towards robust characterisation of young transiting planets.
- ★ SPIMAX seminar, may 2021, Oxford/online.
Invited talk: Probing planet formation through in-depth characterisation of transiting planets.

- ★ UK exoplanet meeting 2021, Birmingham/online
Contributed pop-talk: Transition between ice and gas giants.
- ★ Astronomy seminar LMU, Jan 2021, Munich/online.
Invited talk: Snapshot of planet evolution: overcoming stellar noise to characterise young systems.
- ★ CfA Virtual Exoplanet Pizza Lunch, Nov 2020, Harvard/online.
Invited talk: Transition between Ice and Gas giants explored with TESS and radial velocity measurements.
- ★ Exoplanets III conference, July 2020, Heidelberg/online.
Contributed talk: The transition between Ice and Gas giants.
- ★ Geneva observatory seminar, June 2020, Geneva.
Seminar: Exoplanet demographics in the era of TESS.
- ★ Online TESS science meeting, June 2020, online.
Contributed talk: The transition between Neptune- and Saturn-like planets.
- ★ Jet Propulsion Laboratory's astrophysical journal club, February 2020, Pasadena, USA.
Invited talk: Exploring the transition between Ice and Gas giant exoplanets.
- ★ EPSC-DPS conference, September 2019, Geneva.
Contributed talk: Exploring the transition between ice- and gas giant exoplanets from TESS.
- ★ Plato ESP workshop, September 2019, Warwick, UK.
Contributed talk: RV-follow up of mono-transits from TESS.
- ★ TESS science meeting, July 2019, Cambridge, USA.
Contributed talk: Precise mass determination of three mini-neptunes transiting TOI-125.
Poster: Radial velocity follow-up with CORALIE on the Swiss 1.2m Euler telescope.
- ★ Summer school on exoplanet-demographics, May 2019, Vietri, Italy.
Contributed talk: Exoplanet demographics in the era of TESS: results from the radial velocity follow-up from the first 9 sectors.
- ★ Swiss 'PlanetS' TESS workshop, May 2019, Geneva.
Overview talk: Results from TESS sectors 1-9 and ground based follow-up observations.
- ★ NIRPS Science team meeting, April 2019, Geneva.
Invited talk: Geneva activities on TESS-follow up.
- ★ Exoplanet II Conference, July 2018, Cambridge, UK.
Poster: Exploring the transition between ice & gas giants through ground-based transit surveys and radial velocity measurements
- ★ Extremely precise RVs III, August 2017, Penn State, USA.
Poster: Exploring the power of Fabry-Perot calibration with the spectrographs SOPHIE and CORALIE.
- ★ Transiting Exoplanets conference, July 2017, Keele, UK.
Poster: Radial Velocity Follow-up of SuperWASP Candidates with the Swiss Euler Telescope.
- ★ Swiss JWST workshop, May 2017, Bern, Switzerland.
Invited talk: Capabilities of NIRSPEC-JWST for exoplanet science.

Student supervision

Supervised students working on independent research projects at Geneva University:

- ★ *Cebine Ragn*
High school student: 'Junior researcher' competition in Denmark. (un)Habitability of planets around M-dwarfs. Summer 2020.
- ★ *Jules Dallant*
Master student: TESS follow-up and exoplanet databases. Spring 2020.
- ★ *Francesco DeMarco*
Master student: comparing methods of modeling RVs + transit light curves. Spring 2020.
- ★ *Maulik Bhatt*
Master student: Optimizing TESS follow-up by identifying blended stellar binaries. Spring 2020.
- ★ *Maxime Zahler*
Bsc. student: Global statistic of TESS results. Autumn 2019.
- ★ *Mohamed Chehik*
Bsc. student: Caractérisation des premiers candidats exoplanètes de TESS. Autumn 2018.
- ★ *Carmelo Mileto*
Bsc. student: Follow-up of NGTS planet candidates. Spring 2018.
- ★ *Erik Lindstrom*
High school student: final year project. Transit analysis on WASP-47. Spring 2018.

Teaching and Outreach

- ★ Co-creator and host of the Danish-speaking podcast *Stjerneklart* about astronomy and space exploration. 37 episodes: <https://stjerneklart.dk/>
- ★ Speaker at Girls day in Science, October 2021, Skive Gymnasium, Denmark.
- ★ Guest speaker astrophysics summer-student programme *Introduction to Exoplanet science in the era of TESS*, summer 2021, Oxford/online.
- ★ Speaker at recruitment event 'Be a Star in ESA's Universe'. Nov 2020, online.
- ★ Teacher assistant for Masters course on 'Exoplanet detection techniques' at Geneva Observatory, Spring 2020, including in-person and online teaching.
- ★ Tours, talks and observation nights at Geneva observatory, about 10 groups per year, 2017-2020.
- ★ Taught exercise- and lab classes for Bachelor students at physics at Copenhagen University, including Classical Mechanics and Electrodynamics. April 2010 - June 2014.
- ★ Jens Martin Knudsen award for best teaching of the year at the Niels Bohr Institute, Copenhagen University, along with the full team of instructors in 06/2014.

Community services & Collaborations

- ★ Reviewer for NASA's Exoplanets Research Program, 2021.
- ★ Reviewer for ApJ, 2020-2021.
- ★ External scientific reviewer for OPTICON, 2021.
- ★ External scientific reviewer for the ERC consolidator grant, 2020.
- ★ Reviewer for the ESO peer review experiment, 2019.
- ★ Member of the TESS follow-up programme (TFOP) spectroscopic steering committee, representing CORALIE-science team and Geneva observatory, 2018 - 2021.

- ★ Member of the NIRPS science team, contributing to the exposure time calculator, commissioning and target selection, 2017 - 2021.
- ★ Member of the NGTS consortium, coordinating radial velocity follow up of NGTS planet candidates, vetting and target selection, 2017 - present.

Conference organisation

- ★ Convener for splinter session on Young Planets at TESS Science conference II, August 2021, Pasadena/online.
- ★ Lab assistant and moderator for hands-on session on planet spectra at Sagan Summer School July 2021, Pasadena/online.
- ★ Session chair at the Exoplanets Demographics Conference, Pasadena/online, November 2020.
- ★ Moderator for the Exoplanets III conference, Heidelberg/online, June 2020.
- ★ Conference assistant at EPSC-DPS joint meeting, Geneva, Switzerland, September 2019.
- ★ Organiser of the NGTS Science meeting in Geneva, Switzerland, May 2019 .
- ★ Organiser of the PlanetS TESS workshop in Geneva, Switzerland, May 2019.
- ★ Local organising committee for Extremely precise RV workshop IV, Grindelwald, Switzerland, Feb 2019.

Computing Experience

I am proficient in Python including the ASTROPY package, TENSORFLOW and simple machine learning, as well as Unix/Shell programming. I have experience using IRAF/PyRAF, Matlab, IDL, HTML and SQL.

Language skills

I speak English and Danish fluently.

German, French, Spanish and Dutch I can get by with in non-academic situations, as well as Swedish and Norwegian.