

Jens-Kristian Krogager

Centre de Recherche Astrophysique de Lyon

9 Avenue Charles André
69230 Saint-Genis-Laval, France

+33 7 68 00 24 76

jens-kristian.krogager@univ-lyon1.fr

orcid: 0000-0002-4912-9388

website: github.com/jkrogager

DATE OF BIRTH March 12, 1988; *Holbæk, Denmark*

CITIZENSHIP Danish

EDUCATION

Ph.D., 2011 – 2015, Astronomy — advisor: Prof. Johan P. U. Fynbo.

Dark Cosmology Centre, Niels Bohr Institute, University of Copenhagen

Title: *“Galaxies in the early universe characterized in absorption and emission”*

Defended Nov 6th, 2015

M.S., 2010 – 2013, Astronomy — advisor: Prof. Johan P. U. Fynbo

Dark Cosmology Centre, Niels Bohr Institute, University of Copenhagen

Joint Master’s and Ph.D programme

B.S., 2006 – 2009, Physics and Astronomy

Niels Bohr Institute, University of Copenhagen

Title: *“Possibilities for exoplanet detection using gravitational microlensing”*

RESEARCH EXPERIENCE

2022 **Centre de Recherche Astrophysique de Lyon, France**

Jan Université Claude-Bernard Lyon1

Associate Astronomer (tenure) — Astronome-adjoint

2021 – 2021 **Université de Genève, Switzerland**

Feb Dec Senior Research and Teaching Assistant, with Dr. A. De Cia

2018 – 2021 **Institut d’Astrophysique de Paris, France**

Feb Feb Postdoctoral researcher, with Dr. P. Noterdaeme

2016 – 2018 **Institut d’Astrophysique de Paris, France**

Jan Jan Postdoctoral research fellow,

funded by the Danish Council for Independent Research

2015 – 2016 **Dark Cosmology Centre, University of Copenhagen, Denmark**

Dec Jan Postdoctoral Researcher, working with Dr. L. Christensen

2012 – 2014 **European Southern Observatory, Santiago, Chile**

Dec Dec PhD Studentship, working with Dr. C. Ledoux

GRANTS AND FELLOWSHIPS

- 2023 **University Claude Bernard of Lyon**
Starting grant (6000€)
- 2022 **Programme National de Cosmologie et Galaxies (PNCG)**
Support for 4MOST infrastructure (7000€)
- 2017, 2019 **ESO Scientific Visitor Programme, ESO Santiago, Chile**
5 and 6 weeks, respectively, working with Dr. C. Ledoux and Dr. A. Smette.
- 2015 **MOBILEX fellowship – Danish Council for Independent Research**
“Chemical Enrichment and Dust in the Early Universe”,
2 year research grant (265,000 €) — Grant ID: DFF – 5051-00115
- 2012, 2014 **Instrument Center for Danish Astrophysics**
Two travel grants (2 x 2000 €) to go to the Nordic Optical Telescope
- 2011 **Danish Agency for Science and Innovation**
Grant for ESA summer school on development of space-based instrumentation
Alpbach, Austria (2000 €).

INSTRUMENTATION AND INTERNATIONAL SURVEYS

4MOST-Gaia Purely Astrometric Quasar Survey

PI of ESO public survey (30 Cols in 13 countries)
5-year survey with the ESO/VISTA telescope in Chile

4MOST Consortium (GTO cosmology survey)

Co-lead of working group for data analysis pipelines (IWG8)
Member of instrument development team at CRAL, France

WEAVE-QSO survey

Co-responsible for target selection of quasars, Survey Architect
5-year survey with the William Herschel Telescope on La Palma, Spain

MeerKAT Absorption Line Survey (MALS)

Working group chair for optical spectroscopic follow-up
5-year survey with the SKA pre-cursor radio array MeerKAT in South Africa

ELT/HARMONI

Member of instrument pipeline development team at CRAL, France
First-light instrument for the European 39-m telescope in Chile (the ELT)

NOT Transient Explorer (NTE)

Col — Pipeline development for the Nordic Optical Telescope

PUBLICATIONS

(as of June 2023 — full list of publication attached separately)

Refereed articles: 74 — as first author: 13
h-index: 23

Active reviewer for MNRAS, ApJ, A&A, PASJ

TEACHING AND SUPERVISION

- 2022 **Electricity and radioactivity, 1st year**
lab exercises and tutorials (Uni. of Lyon; 1 semester, 30h)
- 2022 **Indo-French Astronomy School**
Co-organizer of PhD summer school (Uni. of Lyon and IUCAA)
- 2021 – **Supervision of 2 master students** (Uni. of Geneva and Uni. of Lyon)
- 2021 – **Co-supervision of 2 PhD students** (University of Geneva)
- 2021 **1 week workshop: How to write a telescope proposal**
PhD course in our research group, University of Geneva
- 2021 **2 lectures for Masters and PhD students**
as part of our research group's lecture series, University of Geneva
entitled: "*Absorption spectroscopy and line fitting*," and
"*Connecting galaxies in absorption and emission*"
- 2016 – 2020 **Mentoring of PhD students: A. Ranjan, S. Zou, J. Palmerio, R. Duque**
Institute for Astrophysics of Paris, France
- 2017 **NEON summer school in observational astronomy**
Isaac Newton Telescope and Nordic Optical Telescope, La Palma, Spain
15 days mentoring a group of 4 students.
Responsibilities: preparation and execution of observations, data reduction,
written and oral presentation
- 2015 **Invited lecture for master's course "Galaxy Formation"**
Niels Bohr Institute, University of Copenhagen
2 x 45 min entitled "*Damped Lyman- α Absorbers as probes of Galaxy Evolution*"
- 2012, 2014 **T.A. for the Observing School at the Nordic Optical Telescope**
Organized by the Niels Bohr Institute, University of Copenhagen
3 nights at the telescope each year, 7.5 ECTS each course.
- 2012 **T.A. in Electromagnetism**
Niels Bohr Institute, University of Copenhagen, 30h in total

OBSERVING EXPERIENCE

- PI:** La Silla/NTT; VLT/X-shooter; VLT/SINFONI; VLT/ESPRESSO;
Hubble Space Telescope; Nordic Optical Telescope (NOT); VISTA/4MOST
- Co-I:** VLT/UVES; Southern African Large Telescope (SALT); ALMA; NOEMA;
Gran Telescopio Canarias (GTC); MeerKAT (SKA precursor);
Giant Metrewave Radio Telescope (GMRT);
- Observer:** VLT/X-Shooter; NOT/ALFOSC; Isaac Newton Telescope; NTT/EFOSC2
- Technical project** at ESO/VLT characterizing the 'diaphragm observing mode' for X-Shooter working with instrument scientist, Dr. C. Martayan (2013).

PROGRAMMING AND DATA ANALYSIS

- Programming languages:** Python, HTML, JavaScript, IRAF, SQL, Haskell
- Data reduction:** Long-slit spectroscopy, echelle spectroscopy (X-Shooter), integral-field spectroscopy (VLT/SINFONI), imaging and slit-less spectroscopy (*HST/WFC3*)
- Statistics:** Bayesian parameter estimation (incl. MCMC methods)
Model comparison, statistical modelling of galaxies

Software development (Python):

- VoigtFit** Absorption line analysis with an interactive graphical interface (see github)
- PyNOT** A full pipeline for spectroscopy and imaging from NOT/ALFOSC
The pipeline includes a graphical user interface to handle spectral extraction, wavelength and flux calibration. Publicly available on GitHub.
- xsh** A automated data-organizer and reduction pipeline manager for VLT/X-shooter
- 4XP** Automated analysis pipeline for spectra of extra-galactic sources for 4MOST.
(currently under development)

INSTITUTIONAL RESPONSABILITIES

- 2022 – **Member of Scientific Council** of Centre de Recherche Astrophysique de Lyon
- 2022 – **Member of Scientific Council** of the Observatory of Lyon (OSUL)
- 2022 **Expert External Reviewer** for *Hubble Space Telescope* proposals Cycle 30
- 2019 – 2021 **Postdoc representative** at the institute council at IAP, France
- 2018 – 2021 **Organizer of weekly social events** for physics postdocs across Paris
(virtually during Covid-19 restrictions)
- 2017 **Organizer** of “*VoigtFit Workshop*”, Dark Cosmology Centre, Denmark
- 2017 **Member of SOC** for Special Session at EWASS, Prague, Czech Republic
“*Damped Lyman-alpha Absorbers in Absorption and Emission*”
- 2013 **Member of LOC** for ESO workshop, “*Deconstructing Galaxies*”, Chile
- 2010 – 2015 **Co-organizer** of astro-ph journal club and seminars at Dark Cosmology Centre

LANGUAGES [ILR SCALE]

Danish (5); English (4+); French, Spanish (4); German, Japanese (2)

INVITED SEMINARS

“A Color-Independent View on Galaxy Evolution through Absorption Spectroscopy”

European Southern Observatory, Feb 2023 (Santiago) and Apr 2023 (Garching bei München)

“The Purely Astrometric Quasar Survey: a color-blind approach to quasar identification”

Tata Institute for Fundamental Research, Mumbai, India, Mar 2021 (virtual)

“Dissecting the High-redshift Interstellar Medium using Absorption Spectroscopy”

University of Geneva, Switzerland, Mar 2021 (virtual)

“Absorption Spectroscopy: a Unique Probe of Galaxy Evolution”

IRAP, Toulouse, France, Jan 2020

“Absorption Spectroscopy: a Unique Probe of Galaxy Evolution”

CRAL, Lyon, France, Sep 2019

“Probing high-redshift galaxies with Damped Lyman-alpha Absorbers”

Ioffe Institute, St. Petersburg, Russia, Oct 2018

“Constraining ISM properties at high-z towards a lensed quasar”

Dark Cosmology Centre, Copenhagen, Denmark, May 2018

PUBLIC OUTREACH

“Actualités astronomiques de février 2023”

Public lecture in French, Observatory of Lyon, France, Feb 2023

<https://www.youtube.com/watch?v=VhRXpFTgPao>

“La Composition du Gaz dans La Voie Lactée n’est pas Homogène”

Press release in English and French, Institute for Astrophysics of Paris, France, Oct 2021

“La Voie Lactée n’est pas homogène”

Radio interview in French with the Swiss national radio station (RTS), Sep 2021

<https://www.rts.ch/audio-podcast/2021/audio/la-voie-lactee-n-est-pas-homogene-25222787.html>

“Surprise: the Milky Way is not homogeneous”

Press release in English and French, University of Geneva, Switzerland, Sep 2021

“Our Milky Way? Not well stirred!”

Artwork creation for online ESO article, Sep 2021

<https://www.eso.org/public/blog/our-milky-way/>

“Babygalaksers Udvikling” (The Evolution of Baby Galaxy)

Public lecture in Danish at the Outreach Observatory of Brorfelde, Denmark, Jun 2021

“Cafés des Sciences” — cancelled due to Covid-19

Open house event for future students at Institute for Astrophysics of Paris, France, Oct 2020

“Fête de la Science”

Open house event at Institute for Astrophysics of Paris, France, Oct 2019

“New knowledge about early galaxies”

Press release and video interview, Niels Bohr Institute, Denmark, May 2013

“Baby galaxies grew up quickly”

Press release, Niels Bohr Institute, Denmark, May 2012