

# Jens-Kristian Krogager

## Centre de Recherche Astrophysique de Lyon

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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, 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, 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

- 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 entitled “Star Formation across the Universe”, 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  
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 development team at CRAL, France  
First-light instrument for the European 39-m telescope in Chile (the ELT)

### NOT Transient Explorer (NTE)

Col — Instrument and pipeline development for the Nordic Optical Telescope

### Maunakea Spectroscopic Explorer (MSE)

Science Team Member and co-author of the science case document

## PUBLICATIONS

*(as of Jan 2022 — full list of publication attached separately)*

Refereed articles: 62 — as first author: 12  
*h*-index: 20

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

## TEACHING AND SUPERVISION

- 2021 – **Co-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- $\alpha$  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).

## LANGUAGES [ILR SCALE]

**Danish (5); English (4); French, Spanish (3); German, Japanese (2)**

## 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 and PyPI.

**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

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

## INVITED SEMINARS

**“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

**“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