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Amalie Stokholm

Galactic Archaeology, asteroseismology & stellar modelling

Experience

Postdoctoral Research Fellow, *CartographY*, ERC G.A. n. 804752, **2023 —**
Sun, Stars & Exoplanets group, University of Birmingham, UK,
Working with Dr. Guy Davies and Prof. William Chaplin.
Postdoctoral Researcher, *Asterochronometry*, ERC G.A. n. 772293, **2021 – 2023**
Dipartimento di Fisica e Astronomia, Università di Bologna, Italy,
Working with Prof. Andrea Miglio.

Education

PhD, *Stellar Astrophysics Centre (SAC)*, DNRF G.A. n. DNRF106, **2017 – 2022**
Department of Physics & Astronomy, Aarhus University, Denmark,
PhD thesis topic: *Studying the Galaxy by studying the stars*
Supervisor: Dr. Víctor Aguirre Børsen-Koch.
MSc Astronomy, **2016 – 2019**
Department of Physics & Astronomy, Aarhus University, Denmark.
BSc Physics, **2013 – 2016**
Department of Physics & Astronomy, Aarhus University, Denmark,
Topic of BSc project: *Interferometric and Asteroseismic Analysis of the*
Subgiant HD 181096
Supervisors: Dr. Víctor Aguirre Børsen-Koch & Dr. Tim White.
Evaluation: 12 (highest possible grade).
The Higher Technical Examination Programme (HTX), **2010 – 2013**
Teknisk Gymnasium Viby, Aarhus Tech, Denmark,
Specialization: Mathematics / Physics / History of Ideas / Chemistry.
Weighted average grade: 12.4 (highest+ possible grade).

Publications

A complete list of my publications along with my publication metrics can be found at
ui.adsabs.harvard.edu/public-libraries/VoJI-I0hQmeylc72urzUw.

Awards

KIF Prize Winner 2023: Female Physicist of the year 2023
awarded by the Danish Network of Women in Physics, see
kvinderifysik.dk/kif-prize-2023.

Committees & collaborations

PLATO Data Center (PDC), **2023 —**
Leader of Work Package 374210 (*Seismic Diagnostics using Forward Stellar Modelling*).
Chair of Postdoc Committee, **2023 —**
School of Physics and Astronomy, University of Birmingham, UK,
Responsible for the annual postdoc survey on the working conditions and
career prospects for early career researchers, leading to new initiatives for
the school such as the informal social postdoc coffees, the professional skills
workshops designed specifically for early career researchers, and the *Physics*
postdoc jamboree, all-school events showcasing and highlighting the research
of early career researchers across different fields of physics at the school.

Committees & collaborations

Early Career Development Network (ECDN), School of Physics and Astronomy, University of Birmingham, UK, Representative for the School of Physics and Astronomy.	2023 —
Referee, Regular referee for the academic journals <i>Astronomy and Astrophysics</i> , <i>Monthly Notices of the Royal Astronomical Society</i> , and telescope proposals.	2021 —
HAYDN Science Consortium, Member of the consortium.	2021 —
PLATO Science Management (PSM), Member of Work Package 125 (<i>Determination of Stellar Parameters</i>).	2019 – 2023
PLATO Science Consortium, Member of the consortium.	2019 —
TESS Asteroseismic Science Consortium (TASC), Member of the consortium.	2017 —
Kepler Asteroseismic Science Consortium (KASC), Member of the consortium.	2017 —
BAYesian STellar Algorithm (BASTA), Core member of the development team behind BASTA, an open-source Bayesian framework for accurate and precise inference of stellar properties such as mass, radius, and age.	2017 —
Equity & Equality Committee, Department of Physics & Astronomy, Aarhus University, Denmark, Member and working group leader.	2017 – 2021
Instrument Center for Danish Astrophysics (IDA), Member of the board, Chair of Working Group 7, and member of 4 additional Working Groups.	2017 – 2018

Selected talks

Contributed talk, Conference <i>TASC8/KASC15</i> , Porto, Portugal, Title of talk: <i>Exploring the Galactic helium enrichment law.</i>	2024
Invited seminar, <i>Astrophysics seminar</i> , University of Birmingham, UK, Title of talk: <i>Learning about the Milky Way by learning about its stars.</i>	2023
Invited talk, Conference <i>Getting ready for PLATO</i> , University of Warrick, UK, Title of talk: <i>Asteroseismic inference for populations of stars.</i>	2023
Contributed talk, Conference <i>Fundamental stellar parameters from asteroseis-</i> <i>mology in the era of Gaia</i> , Aarhus University, Title of talk: <i>A Unified Exploration of the Chronology of the Galaxy.</i>	2022
Invited talk, Seminar series, <i>Good vibrations initiative</i> , online, Title of talk: <i>Chronology of the Milky Way disk with Asteroseismology.</i>	2021
Contributed talk, Conference <i>The life and times of the Milky Way</i> , University of Shanghai, China, Title of talk: <i>Dissecting the Milky Way disk.</i>	2018
Contributed talk, Conference <i>Asteroseismology and Optical Interferometry</i> , Côte d’Azur Observatory, France, Title of talk: <i>HR 7322: A benchmark for stellar evolution.</i>	2017

Observing proposals

- Nordic Optical Telescope (NOT),** **2022**
Co-investigator, proposal *The Milky Way disc low-alpha sequence with the power of asteroseismic age*, granted 2 nights with FIES.
- Telescopio Nazionale Galileo (TNG),** **2022**
Co-investigator, proposal *Exploiting the power of asteroseismology over age: application to the high-alpha sequence in the Kepler field*, granted 23 hours with HARPS-N.

Teaching experience

- Teacher,** **2023 – 2025**
School of Physics & Astronomy, University of Birmingham, UK,
in the module *Group Studies* for Year 3 students (20 credits) in the project *Preparing for the ESA PLATO Mission using Asteroseismology*.
- Teaching assistant,** **2017 – 2021**
Department of Physics & Astronomy, Aarhus University, Denmark.
Alongside my PhD research projects, I followed courses at the Master/PhD level (about 60 ECTS points) and I also worked as a teaching assistant at the institute in the following courses:
- Relativity & Astrophysics, Autumn 2017, BSc course (10 ECTS), 1 unit
 - Galaxies & Cosmology, Spring 2018, BSc course (10 ECTS), 1 unit
 - Relativity & Astrophysics, Autumn 2018, BSc course (10 ECTS), 1 unit + administrative work
 - Relativity & Astrophysics, Autumn 2019, BSc course (10 ECTS), 2 units
- High School Teacher,** **2016 – 2017**
Egaa Gymnasium, Denmark,
Upper-secondary school teacher in the course *Astronomy C* for students in their last year of upper-secondary school.
- Coordinator of Astronomy Internships for ninth graders,** **2016 – 2017**
Department of Physics & Astronomy, Aarhus University, Denmark,
Organizer and teacher of a semi-annual week-long internship for a group of about 12 students on how to study and work in the fields of astronomy and astrophysics, aimed at students in the last years of primary school.
- Interim Teacher,** **2015**
Teknisk Gymnasium Viby, Aarhus Tech, Denmark,
I taught Physics modules four times a week for classes of about 25 students.
Week 8 2015 through week 17 2015.
- Homework tutor,** **2012 – 2013**
Teknisk Gymnasium Viby, Aarhus Tech, Denmark, Organiser of and tutor in the homework café, where students every Wednesday in a cozy environment could work and get tutoring in all subjects.
August 2012 through June 2013.

Supervision	Year 4 students, Kienan Ruddock & Thomas Green,	2024 – 2025
	University of Birmingham, UK, Co-supervisor, project title <i>Mass loss in the globular cluster M4 using asteroseismology and Hierarchical Bayesian Modelling.</i>	
	Year 4 students, George Hookway & Iwan Stephens,	2023 – 2024
	University of Birmingham, UK, Co-supervisor, project title <i>Using Hierarchical Bayesian Modelling to Characterise the Radius Valley.</i>	
	MSc student, Malte Klockmann Pein Malmberg,	2022 – 2023
	Aarhus University, Denmark, Co-supervisor, project title <i>Dating of substructures in the Milky Way.</i>	
Outreach	Astronomy in the City, University of Birmingham Observatory, UK,	2024
	Invited lecturer, speaking about <i>The Story Written in the Stars.</i>	
	videnskab.dk, Denmark,	2023
	Invited researcher, wrote article for the general public about our recent Nature Astronomy study <i>Mysteriet om planeten, der ikke burde eksistere</i> (en: <i>The Mystery of the planet that should not exist</i>).	
	Folkeuniversitet, Denmark,	2020 – 2023
	Invited serial lecturer in the lecture series <i>Universets Gåder</i> (en: <i>Riddles of the Universe</i>) on the topic of <i>Hvordan er vores egen Galakse blevet til?</i> (en: <i>How has our own Galaxy come to be?</i>) at different venues across Denmark.	
	6 Degrees of Science, Aarhus, Denmark,	2018
	Invited guest speaker, speaking about <i>Galactic Archaeology – how Indiana Jones-science relate to everyday life.</i>	
	Astronomy on Tap, Aarhus, Denmark,	2017 – 2019
	Invited serial speaker, speaking about e.g. <i>The Mystery of the Star of Bethlehem</i> and <i>Asteroseismology - what shaky stars can tell us about the Universe.</i>	
Related Experience	Guest researcher,	2020
	Max-Planck-Institut für Astronomie (MPIA), Germany, Research stay at MPIA working with Dr. Coryn Bailer-Jones on <i>Gaia</i> -related projects. Stay got interrupted due to the COVID-19 crisis.	
	Space Astrometry for Astrophysics,	2019
	International School of Space Science, Italy, Summer school about understanding the scientific construction of the <i>Gaia</i> catalogue and its current and future scientific potential in synergy with the large ground-based spectro-photometric surveys.	
	Astrostatistics and Astroinformatics XIV,	2018
	Pennsylvania State University, USA, Summer school about statistics and scientific computing within the field of astrophysics.	

Related Experience

- CHARA Array**, The Center for High Angular Resolution Astronomy Array. **2016**
Mount Wilson, USA,
Research trip to the CHARA Array for 10 nights of observations. Experience with the graphical interface for the Precision Astronomical Visual Observations (PAVO) beam combiner and the PAVO data analysis pipeline.
- EuroPython 2016**, **2016**
Bilbao, Spain,
Attendee at the EuroPython conference.
- Introduction to Complex Systems**, **2015**
Faculty of Science, Utrecht University, the Netherlands,
Summer School in August about emergence, robustness, and predicability of patterns. Sponsored by the awarded Professor Jens Lindhards Scholarship.

Challenge track

- The IFA Challenge Track offers extra challenges to physics students during their bachelor's programme. All students can participate during their first year, while the challenges during the second and third year are reserved for a selected group of students.
- Quantum mechanics**, Subatomic group, Dept. of Physics and Astronomy, **2015**
Aarhus University,
Project on few-body analysis of particles in quantum mechanics.
Supervisors: Prof. Aksel Stenholm & Prof. Nikolaj T. Zinner.
January through June.
- Materials science**, Semiconductor Group, iNANO Center, Aarhus University, **2014**
Project on Indium Tin Oxide (ITO) and optimization of ITO for use in solar cells.
Supervisors: Dr. Ivan Samatov, Prof. Arne Nylandsted Larsen, Prof. Peter Balling, Dr. Brian Julsgaard & Dr. Sanjay Ram
September through December.
- Four introductory projects**, Dept. of Physics and Astronomy, Aarhus **2013–2014**
University.
- **Module 1 on Classical Mechanics**, *The movement of a yo-yo*, oral presentation and a written report. Passed in October 2013.
 - **Module 4 on Experimental Physics**, *Viscosity of fluids and Gyroscopic precession*, two written reports based on the experiments. Passed in January 2014.
 - **Module 5 on Numerical Simulations**, *Asteroseismology*, project and oral presentation based on analysis of asteroseismic data from the *Kepler* Mission.
Supervisor: PhD student Vincent van Eylen. Passed in April 2014.
 - **Module 6 on Quantum Mechanics**, *Entanglement and the Wave-Particle Duality*, self-organised journal clubs and a written report. Passed in July 2014.

Extracurricular activities

Auditor, TÅGEKAMMERET, Aarhus University, Elected for fiscal years 2017/2018 and 2018/2019 and as alternate auditor for 2019/2020.	2017 – 2020
City Council candidate, Socialistisk Folkeparti Aarhus (SF Aarhus), Election 21th of November 2017.	2017
Treasurer (KA\$\$), TÅGEKAMMERET, Aarhus University, Appointed for the board year 2015/16 from September 2015 to September 2016. TÅGEKAMMERET is the oldest student society in Denmark, arranging lectures, parties, and other events for students across different fields of natural sciences. TÅGEKAMMERET hosts on average more than two event per week in term time and all activities are planned by the eight people on the board. The additional responsibility of the treasurer is to manage and bookkeep the finances of the organisation which has a turnover of about ~ 1 million DKK.	2015 – 2016
Auditor, Mat/Fys-Tutorgruppen, Aarhus University, Elected for the fiscal years 2014/2015 and 2015/2016.	2014 – 2016
Tutor, Mat/Fys-Tutorgruppen, Aarhus University, Mat/Fys-Tutorgruppen is a student organisation making sure that all new students starting university across different fields of natural sciences have a pleasant start on their academic journey.	2015
Board member, Socialistisk Folkeparti Ungdom Aarhus (SFU Aarhus), Elected from May 2014 to December 2014.	2014
Treasurer, Socialistisk Folkeparti Ungdom Aarhus (SFU Aarhus), Elected from December 2013 to May 2014.	2014
Party Committee (FU), TÅGEKAMMERET, Aarhus University, Appointed for the board year 2013/14 from September 2013 to September 2014. The party committee at TÅGEKAMMERET helps out with the practical aspect of the events, from preparations of the locations, bartending, cleaning, and closing.	2013 – 2014
City Council candidate, Socialistisk Folkeparti Aarhus (SF Aarhus), Election 19th of November 2013.	2013
Campaign Coordinator, Socialistisk Folkeparti (SF), Aarhus, Coordinator of election activities for the Socialist People's Party in Aarhus in relation to the local and regional council elections. August 2013 through December 2013.	2013
Organizational Vice Chairman, Socialistisk Folkeparti Ungdom Aarhus (SFU Aarhus), Elected from May 2013 to December 2013.	2013
Cleaning assistant, Medical doctor Bente Hasling, Aarhus, Cleaning staff for the medical clinic and psychiatrist's office.	2012 – 2015
Board member, Socialistisk Folkeparti Ungdom Aarhus (SFU Aarhus), Elected from May 2012 to May 2013.	2012 – 2013
Member, Socialistisk Folkeparti Aarhus (SF Aarhus).	2012 –
Member, Socialistisk Folkeparti Ungdom Aarhus (SFU Aarhus).	2008 – 2024