

KATARZYNA MAGDALENA DUTKOWSKA

CURRICULUM VITAE

PERSONAL DETAILS

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Nationality: Polish

EDUCATION AND EMPLOYMENT

12/2022 Ph.D. fellow, Niels Bohr Institute & Centre for Star and Planet Formation, University of Copenhagen, Copenhagen, Denmark
Thesis: *Tracing star formation at high redshift using the Milky Way as a template*, supervisor: Lars Egstrøm Kristensen; Ph.D. expected at the beginning of 2023

08/2019 M.Sc. (in Astronomy), Nicolaus Copernicus University, Toruń, Poland
Thesis: *Cluster-in-a-box: understanding how low-mass stars form in high-mass clusters using 338.4 GHz methanol emission as an outflow tracer*, advisor: Agata Karska, co-advisor: Lars Egstrøm Kristensen; defended on August 12th, 2019

07/2017 B.Sc. (in Astronomy, Physics and Computer Usage), Nicolaus Copernicus University, Toruń, Poland
Thesis: *Searching for correlations between parameters of planetary nebulae and their central stars*, advisor: Krzysztof Gęsiński; defended on July 27th, 2017

AWARDS AND HONORS

2019 Scholarship of the Minister of Science and Higher Education for outstanding achievements, Ministry of Science and Higher Education of the Republic of Poland

SCIENCE PROJECTS AND PROPOSALS

03/2021 Proposal: Unravelling low-mass protostars in a dense high-mass cluster
Scientific observations with Submillimeter Array in block 2021A; role: PI; cancelled due to COVID-19

01/2018–09/2018 Project: The impact of physical and chemical conditions on the star formation process: identification and characterization of young stellar objects in the Outer Galaxy
Advisor: Dr. Marta Sewilo

06/2017–09/2018 Project: Impact of the UV radiation on early star formation stages
Advisor: Dr. Agata Karska

TEACHING EXPERIENCE

2022 co-advisor of a B.Sc. project, University of Copenhagen

2021/2022 TA during the B.Sc. course *Introduction to Computing for Physicists*, University of Copenhagen [hybrid]

2020/2021 TA during the B.Sc. course *Experimental Physics*, University of Copenhagen [F2F]

2019/2020 TA during the M.Sc. course *The Interstellar Medium and Formation of Stars*, University of Copenhagen [online]

TALKS

05/2022	Annual Danish Astronomy Meeting, Fredericia, Denmark; Talk: <i>Star formation through Cosmic history: from the perspective of a Milky Way inhabitant</i>
05/2022	StarPlan Science Day, Copenhagen, Denmark; Talk: <i>Star formation: a Galactic view</i>
06/2021	StarPlan Science Day, Copenhagen, Denmark; Talk: <i>What is in the box?</i>
10/2018	Astronomy Students' Associations Conference KSAKN, Wrocław, Poland; Talk: <i>Basics of astrochemistry</i>
09/2018	National Astronomy Students' Seminar OSSA, Kraków, Poland; Talk: <i>Infrared and maser emission associated with low mass protostars</i>
09/2018	48th Young European Radio Astronomers Conference YERAC, Dwingeloo, Netherlands; Talk: <i>Infrared and 22 GHz water emission associated with a Sun-like protostar</i>
04/2018	Astronomy Students' Associations Conference KSAKN, Kraków, Poland; Talk: <i>Hawaiian observations</i>

WORKSHOPS AND INTERNSHIPS

06/2022	<i>The Interstellar Shocks School</i> , Les Houches, France
06/2021	<i>Virtual OPTICON Archival School using ESO and ALMA data</i> , online school
03/2021	<i>The Ultimate MySQL Bootcamp: Go from SQL Beginner to Expert</i> , online bootcamp
03/2021	<i>2021 SMA Interferometry School</i> , online school
12/2020	<i>Scientific Writing in Astro</i> , online workshop
03/2018	Student exchange visit, Munich - Garching, Germany
07/2017	Summer student internship in Astronomical Observatory of the University of Wrocław, Białków, Poland
06/2017	<i>Python in science</i> , workshop, Toruń, Poland

PUBLIC OUTREACH AND PROMOTION

2014-2018	Volunteer during popular science public events
2018	Popular science articles for the Polish daily newspaper <i>Gazeta Wyborcza</i>
08/2018	Volunteer during the XXXth General Assembly of the International Astronomical Union, Vienna, Austria
10/2022	Volunteer during the Niels Bohr Legacy Symposium in Astrochemistry, Copenhagen, Denmark

PRACTICAL SKILLS

Mother tongue:	Polish
Other languages:	English (fluent in reading, speaking, writing) French (can read with dictionary)
Astronomical data processing environments (CASA, HIPE, CLASS, basic IRAF and AIPS)	
Programming languages: Python, SQL, CSS, basic C and C++	

List of publications

Publications:

Dutkowska, Katarzyna M. & Kristensen, Lars E. 2022. *Water emission tracing active star formation from the Milky Way to high-z galaxies*. A&A. [in press]:

- Presentation of the galaxy-in-a-box model, a large-scale statistical galactic model of emission from galactic active star-forming regions.
- Parameter space study evaluating the impact of the most important global-star formation parameters on predicted emission from simulated galaxies.
- Results for para-H₂O 2₀₂ -1₁₁ line at 988 GHz show that the initial mass function and molecular cloud mass distribution have a negligible impact on the emission, both locally and globally, whereas the opposite holds for star-formation efficiency and free-fall time efficiency.

Outreach publications:

Dutkowska, Katarzyna M. 2018. *When space-time bends* (orig. Gdy czasoprzestrzeń się ugina). Gazeta Wyborcza.

Dutkowska, Katarzyna M. 2018. *Where science meets practice - research with the use of an optical atomic clock* (orig. Gdzie nauka spotyka praktykę, czyli badania z udziałem optycznego zegara atomowego). Gazeta Wyborcza.

Posters:

Dutkowska, Katarzyna M. & Kristensen, Lars E. 2022. *Star formation through Cosmic history: from the viewpoint of a Milky Way inhabitant*. European Astronomical Society Annual Meeting. Valencia, Spain.

Rashdan, Omar, **Dutkowska, Katarzyna M.** & Kristensen, Lars E. 2022. *Modeling molecular emission to uncover the mass distribution of forming stars*. Annual Danish Astronomy Meeting. Fredericia, Denmark.

Dutkowska, Katarzyna M. & Kristensen, Lars E. 2021. *Galaxy-in-a-box: unveiling star formation across Cosmic time*. European Astronomical Society Annual Meeting. Online conference.

Dutkowska, Katarzyna M. & Kristensen, Lars E. 2021. *Galaxy-in-a-box: Linking Galactic and Extragalactic Star Formation*. Annual Danish Astronomy Meeting. Online conference.

Dutkowska, Katarzyna M., Kristensen, Lars E. & Bergin, Edwin A. 2020. *Linking Galactic and Extragalactic Star Formation Through Water Emission*. Physique et Chimie du Milieu Interstellaire PCMI. Le Havre, France.

Dutkowska, Katarzyna M. et al. 2018. *Strongly variable water maser associated with a Sun-like protostar*. XXXth General Assembly of the International Astronomical Union IAU. Vienna, Austria.

Dutkowska, Katarzyna M. et al. 2018. *Peculiar H₂O maser in a solar-type protostar L1448 IRS 2*. Prebiotic Molecules in Space and Origins of Life on Earth. Bad Honnef, Germany.

Dutkowska, Katarzyna M. & Żółtowski, Michał. 2017. *Astrochemistry: then and now*. Astronomy Students' Associations Conference KSAKN. Warsaw, Poland.