



Jenny Frediani

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Address: Institutionen för astronomi, AlbaNova, 11421, Stockholm, Sweden (Work)

ABOUT ME

Ph.D. student at Stockholm University in the field of planet formation and astrochemistry. Born and raised on the sunny seaside of Puglia in southern Italy. Passionate about science, nature, and food, pursuing a happy life and grateful for the opportunity to connect with people from around the world.

EDUCATION AND TRAINING

16/10/2023 – CURRENT Stockholm, Sweden

PH.D. IN ASTRONOMY Stockholm University

Supervisor: Dr. Arjan Bik (SU)

Co-supervisor: Dr. Alexis Brandeker (SU)

This project is part of the eXtreme UV Environments (XUE) James Webb Space Telescope (JWST) Cycle 1 program (GO-1759; PI. Ramirez-Tannus). The aim is to investigate the physics and the chemistry of a sample of 14 proto-planetary disks that are externally irradiated by strong UV radiation of massive stars in the star-forming region NGC 6357. All the data is obtained and proposals for follow-up observations are submitted or being planned. The team consists of around 30 international collaborators with a very wide range of experience.

Website <https://www.su.se/departments-of-astronomy/> |

Thesis Physics and chemistry of planet-forming disks in extreme radiation environments

09/2022 – 29/09/2023 Bologna, Italy

MASTER'S DEGREE IN ASTROPHYSICS AND COSMOLOGY Bologna University

Supervisor: Prof. Leonardo Testi (UNIBO, INAF-OAA).

Co-supervisor: Dr. Marta De Simone (ESO, INAF-OAA).

Address Department of Physics and Astronomy "Augusto Righi" - DIFA, Bologna, Italy | **Website** <https://corsi.unibo.it/2cycle/Astrophysics> |

Field of study Second cycle degree in Physical and Astrophysical sciences | **Final grade** 110/100 cum Laude | **Type of credits** ECTS |

Number of credits 120 | **Thesis** Constraining the chemical conditions of IRAS 4A2 protostar at planet-forming scales

Link <https://www.linkedin.com/in/jenny-frediani-90a156298/>

27/02/2023 – 03/06/2023 Garching, Germany

INTERNSHIP FOR THE PREPARATION OF THE THESIS ABROAD ESO Garching | European Southern Observatory

Supervisor: Prof. Leonardo Testi (UNIBO, INAF-OAA).

Co-supervisor: Dr. Marta De Simone (ESO, INAF-OAA).

Thesis Constraining the chemical conditions of IRAS 4A2 protostar at planet forming scales

Link <https://www.linkedin.com/in/jenny-frediani-90a156298/>

01/2023 – 02/2023

CURRICULAR INTERNSHIP Istituto Nazionale di Astrofisica OAS Bologna

Supervisor: Dr. Gabriele Rodeghiero (INAF-OAS)

Analysis of atmospheric data obtained with radio soundings from a weather balloon. Use of programming software for analyzing and visualizing databases of atmospheric measurements and modeling atmospheric seeing for astronomical applications. Report of the results in a paper to be provided upon completion of the internship.

Thesis Analysis of atmospheric data for models of the astronomical seeing

Link <https://www.climantartide.it/pub/index.php?lang=it>

09/2018 – 24/09/2022 Bologna, Italy

BACHELOR'S DEGREE IN ASTRONOMY Bologna University

Supervisor: Prof. Daniele Dallacasa (UNIBO)

Address Department of Physics and Astronomy "Augusto Righi" - DIFA, Bologna, Italy | **Website** <https://corsi.unibo.it/1cycle/Astronomy> |

Field of study First cycle degree in Physical and Astrophysical sciences | **Final grade** 108/110 | **Type of credits** ECTS | **Number of credits** 180 |

Thesis L'ATOMO DI IDROGENO: RIGHE, SERIE E SUA IMPORTANZA IN ASTROFISICA (The Hydrogen atom: spectral lines, spectral series and its importance in Astrophysics) - Supervisor: Prof. Daniele Dallacasa (DIFA, IRA - INAF Bologna)

Link <https://www.linkedin.com/in/jenny-frediani-90a156298/>

● CONFERENCES AND SEMINARS

01/07/2025 – 05/07/2025 Harpa Conference Centre, Reykjavik, Iceland

Second Biennial European Astrobiology Conference (BEACON)

Contributed talk.

The XUE program: the JWST/MIRI view on planet-forming disks

Link <https://europeanastrobiology.eu/beacon-25-abstract-submission-and-registration/>

15/06/2025 – 20/06/2025 Mount Holyoke College, Massachusetts, United States

GRC conference "Constraints on Planet Formation from Theory, Observations, and Meteoritics"

Contributed poster.

XUE program: the JWST/MIRI view on planet-forming disks in a massive star forming region

Link <https://www.grc.org/origins-of-solar-systems-conference/2025/>

14/06/2025 – 15/06/2025 Mount Holyoke College, Massachusetts, United States

GRS conference "Constraining the Fundamental Building Blocks of Planets"

Contributed talk.

XUE Program: The JWST/MIRI View on Planet-forming Disks in a Typical Star Forming Region

Link <https://www.grc.org/origins-of-solar-systems-grs-conference/2025/>

24/02/2025 – 28/02/2025 Ringberg Castle, Kreuth, Germany

MPIA workshop "A sharper view: Celebrating 3 years of JWST observations of planet-forming disks"

Invited talk.

The curious case of the XUE 10 disk: extreme irradiation implies extreme CO₂ chemistry?

Link <https://sites.google.com/view/3-years-of-protoplanetary-disk/home>

09/12/2024 – 12/12/2024 Rice Global Paris Center, Paris, France

The Role of Environment in Planet Formation Meeting

Contributed talk.

XUE program: the JWST/MIRI view on extremely irradiated planet-forming disks in the massive NGC 6357 star cluster

Link <https://megantheastronomer.wordpress.com/the-role-of-environment-in-planet-formation-meeting-at-the-rice-global-paris-center-december-9-12-2024/>

19/08/2024 – 23/08/2024 Globe Institute, Copenhagen, Denmark

Summer School "From dust to DNA"

Contributed poster.

The curious case of XUE 10: extreme irradiation implies extreme CO₂ chemistry?

Link <http://dust2dna.dk>

Contributed talk.

Anomalous CO₂ isotopic ratios in a highly irradiated planet forming disk in NGC 6357

Link <https://thaworth.wixsite.com/astro/rs2024>

01/07/2024 – 05/07/2024 Padova Congress, Padova, Italy
European Astronomical Society (EAS) Annual Meeting

Contributed talks.

The XUE program: investigate the impact of external photoevaporation on planet-forming disks with JWST
Constraining the chemical conditions of IRAS 4A2 protostar at planet-forming scales

Link <https://eas.unige.ch/EAS2024/>

12/02/2024 – 23/02/2024 Les Houches School of Physics, Les Houches, France
Winter School "The physics of star formation"

Contributed talk.

Physics and chemistry of planet-forming disks in extreme radiation environments

Link <https://physstarform.sciencesconf.org>

11/09/2023 – 14/09/2023 University of Trieste, Trieste, Italy
2nd National Congress of Protoplanetary Astrochemistry

Contributed talk.

Chemical segregation around the IRAS4A2 protostar at planet-forming scale

Link <https://indico.ict.inaf.it/event/2344/>

HONOURS AND AWARDS

13/12/2024
Astronomy and space science scholarship – Royal Swedish Academy of Science

76 550 SEK

The impact of inside-out extreme irradiation of planet-forming disks

Funding opportunity for doctoral students and postdoctoral researchers in the engineering sciences employed at a Swedish higher education institution or another public research principal for purposes such as project operating costs, expenses for international stays, or conference travel where own research results are presented.

Link <https://www.kva.se/en/scholarship/general-announcement-for-astronomy-and-space-science/>

27/10/2024
Short-Term Scholarship - The Blanceflor Foundation – The Blanceflor Foundation

40 000 SEK

The impact of inside-out extreme radiation on protoplanetary disks

The Foundation supporting high level scientific research and studies by funding international exchange for Italian or Swedish citizens within scientific research and education granting individual scholarships for studies or research abroad.

Link <https://blanceflor.org>

19/06/2024
Alva and Lennart Dahlmark research grant – Department of Astronomy | Stockholm University

7000 SEK

Opportunity for young researchers employed at the Department of Astronomy, Stockholm University, to get research grants for the fall (June – January) of 2024, to be used e.g. cover travel costs to conferences, research-oriented summer/winter schools, equipment, instruments, computer hardware or software - or other things that can contribute to further research.

28/11/2023
Best Master's thesis in the DIFA department – Department of Physics and Astronomy | Bologna University

1000 EUR

Constraining the chemical conditions of IRAS 4A2 protostar at planet-forming scales

Cash prize for the best Master's thesis of graduates in progress in the academic years 2021-22, and 2022-23 of the department of Physics and Astronomy "Augusto-Righi" (DIFA) of the University of Bologna.

Link <https://bandi.unibo.it/s/difa/bando-12-premi-per-la-migliore-tesi-di-laurea-magistrale-difa>

24/11/2023

Alva and Lennart Dahlmark research grant – Department of Astronomy | Stockholm University

9000 SEK

Opportunity for young researchers employed at the Department of Astronomy, Stockholm University, to get research grants for the spring (January – June) of 2024, to be used e.g. cover travel costs to conferences, research-oriented summer/winter schools, equipment, instruments, computer hardware or software - or other things that can contribute to further research.

25/01/2023

Scholarship for preparation abroad of the Master's Degree Thesis – Department of Physics and Astronomy | Bologna University

1000 EUR

Constraining the chemical conditions of IRAS 4A2 protostar at planet-forming scales

Scholarships for the preparation abroad of the Master's degree thesis of the Department of Physics and Astronomy "Augusto-Righi" (DIFA) of the University of Bologna. Thesis projects on topics with international content and/or approach are taken into consideration, for which the search for material and information abroad proves to be of significant academic usefulness.

Link <https://bandi.unibo.it/s/aform9/i-bando-a-a-2022-23-borse-di-studio-per-la-preparazione-all'estero-della-tesi-di-laurea-magistrale-dipartimento-di-fisica-e-astronomia>

14/12/2022

ESO Internship – ESO Garching | European Southern Observatory

1800 EUR plus accommodation

Constraining the chemical conditions of IRAS 4A2 protostar at planet-forming scales

The European Southern Observatory (ESO) yearly offers internships in scientific research at its headquarters in Garching, Germany.

Link <https://www.eso.org/public/>

ER.GO Scholarship – Regional Agency for the Right to Higher Education | Emilia-Romagna

2018 - 2022

ER.GO provides to students on the basis of economic, merit, and enrolment requirements different possibilities of accommodation inside its students' residences and financial aid in the form of scholarships, which also entitle to the total tuition fee exemption and the refund of the regional tax.

Link <https://www.er-go.it>

WORK EXPERIENCE

BOLOGNA UNIVERSITY

MASTER'S DEGREE GUIDANCE SERVICES TUTOR – 12/2022 – 12/2023

120 hours for the needs of the Department of Physics and Astronomy "Augusto Righi" in terms of:

- Guide the students interested in choosing the Master's Degree;
- Provide information/help/useful indications on courses to freshmen and students already enrolled;
- Personalized learning support activities, with reference to specific subjects and disciplines;
- Assistance in personalizing one's own study plan and in choosing the single educational activities of the study course in question.

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C1	C1	C1
SPANISH	B1	B1	A2	A2	A2
FRENCH	A1	A1	A1	A1	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● SKILLS

Programming languages

Python | Fortran (77, 95)

Software for astrophysical analysis

JWST Pipeline | CASA | radex.py | DS9 | TOPCAT

Text editors

Gedit | Jupyter Notebook | LaTeX

Operating systems

Windows | MacOS | Linux

Presentation programs

Keynote | Word | Powerpoint