

Andrea Costa

Astrophysics Student

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Nationality: Italian, Swedish

Education

University of Groningen, MSc in Astronomy: Quantum Universe Feb 2025 – Present

University of Groningen, BSc (Honors) in Astronomy Sept 2021 – July 2024

- Entered the prestigious Honors College
- **GPA:** 8.5/10 (top of the class), graduated Cum Laude

International School of the Stockholm Region, IB DP Diploma Sept 2019 – July 2021

- Re-derived the famous period-luminosity relationship for Cepheid variable stars with novel data from Gaia DR2.
- **Higher Level Classes:** Mathematics AA HL, Physics HL, Chemistry HL - achieved maximum grades in all three (top of the class)
- **Activities:** Science Tutoring Club President, Programming Club, Science Fair President.

Research Experience

As part of my Bachelor's degree, I entered the University's Honors College. The Honors Program is an additional program that is followed together with the regular Bachelor's degree. It gives students the opportunity to challenge themselves further through a series of deepening and broadening modules, activities, and research. As part of the Honors College, I decided to undertake a research project with Prof. Dr. F. Fraternali and Dr. G. Pezzulli: I developed an inside-out galaxy evolution model for star-forming (disk) galaxies. I then used it to predict current astronomical observations of the baryonic mass-angular momentum relation dependency on the gas fraction. In this extensive research project I developed thorough skills in data/physics modeling and visualization, as well as statistical data processing and analysis. This research was later continued for my Bachelor's thesis, and is the foundation for a publication currently in preparation.

Professional Experience

IB Mathematics and Physics Tutor, *Private Tutoring* Dec 2023 – Present

- Providing personalized tutoring in Mathematics and Physics for 3+ IB Diploma students.
- Successfully improved student performance and confidence, achieving measurable grade improvements, with all students attaining at least 6 out of 7.

Technical Skills

Strong background in Mathematics, Physics, Astronomy, and python programming including machine/deep learning, statistical analysis, data visualization, and theory-driven modeling.

Programming Languages: Python, SQL, C, bash, LaTeX

Technologies: Jupyter, Visual Studio Code, PostgreSQL, ADQL, git

Academic Achievements

Cum Laude and Honors College, University of Groningen July 2024

I graduated the standard Bachelor's degree with a Cum Laude distinction, as well as graduating the Honors College, a feat achieved by no one else in my year.

Mathematics Student of the Year, ISSR, Stockholm June 2021

I was named the student of the year in Mathematics Analysis and Approaches (AA) HL.

Languages

- Italian, native
- English, native
- Spanish, B1
- Swedish, A1

Extra-curricular Activities

Galaxy Journal Club, University of Groningen Dec 2022 – Present

- Participated in presentations and presented recent papers in galaxy formation and evolution

Science Fair President, ISSR Sept 2020 – June 2021

- Started the first ever science fair in my high school

Science Tutoring Club President, ISSR Sept 2019 – June 2021

- President of the first student-led science tutoring team
- Tutored 10+ students, improving their grades in math and science to at least a 6/8.

Hobbies: Programming, Gym, Football, Videogames, Fantasy Books