

Greta Toni

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PhD Student in Astrophysics^{1,2,3}

¹ Dipartimento di Fisica e Astronomia A. Righi, Alma Mater Studiorum Università di Bologna, via Gobetti 93/2, 40129 Bologna, Italy

² INAF - Osservatorio di Astrofisica e Scienza dello Spazio di Bologna, via Gobetti 93/3, 40129 Bologna, Italy

³ Zentrum für Astronomie, Universität Heidelberg, Philosophenweg 12, 69120 Heidelberg, Germany

Detection and characterization of galaxy clusters and groups in photometric surveys with the AMICO algorithm

EXPERIENCE

ZENTRUM FÜR ASTRONOMIE (ZAH-ITA), UNIVERSITÄT HEIDELBERG, GERMANY

Affiliated Junior Researcher

Mar. 2024 – present

LSST DESC

Junior Associate

Nov. 2023 – present

ESA'S EUCLID MISSION

Consortium Member

Jan. 2023 – present

INAF – OAS, BOLOGNA

Affiliated Junior Researcher

Nov. 2022 – present

ALMA MATER STUDIORUM - UNIVERSITÀ DI BOLOGNA, ITALY

Ph.D. Student | C/C++, Python, R

Nov. 2022 – present

- **Detections of galaxy clusters and groups in multi-band wide-field surveys.** Application to deep fields, preliminary data, testing and validation of the AMICO algorithm.

Zemax OpticStudio (Internship) | Zemax OpticStudio, Parallel Virtual Machine

Feb 2019 – Jun 2019

- Experience with Zemax software in construction of optical systems, analysis, optimization and catalogues.

FREELANCE TEACHER

Private tutoring teacher in Physics and Mathematics/Analysis

2020 – present

PUBLICATIONS

- **AMICO-COSMOS galaxy cluster and group catalogue up to $z = 2$** | Toni G. et al, 2024, A&A, 687, A56
- COSMOS Brightest Group Galaxies-III: Evolution of stellar ages | Gozaliasl G. et al, 2024 (incl. GT), A&A, 690, A315
- **The COSMOS-Web deep galaxy group catalog up to $z = 3.7$** | Toni G. et al, 2025, sub. to A&A, 2501.09060

SKILLS

- 🔧 R, C/C++, Python (numpy, sklearn, pandas, matplotlib, astropy), Fortran, LaTeX, SQL, ADQL, bash, UNIX
- 📷 SAOImageDS9, TOPCAT, gnuplot, ggplot2, GIMP
- 🗣️ English C1-C2 – Italian native – German B2 – Japanese A1 – French A2

EDUCATION

Ph.D. Astrophysics | University of Bologna, Italy - **expected graduation date:** March 2026

2022–present

M.Sc. Astrophysics & Cosmology | University of Bologna, Italy – **with honours**

2019–2022

B.Sc. Astronomy (equiv. Physics) | University of Bologna, Italy – **with honours**

2016–2019

HONOURS

- Marco Polo funding for research period abroad (4 months) *Mar. 2024*
- Prize for best Master's Thesis for graduates in the Master's Degree Courses of DIFA, Bologna. *Dec. 2022*
- Premio allo Studio-XVI Edizione - Awarded for Master Degree results, by *Banca Centro Emilia* bank. *Dec. 2022*