

Marianna Foschi

Postdoctoral Scholar Research Associate in Physics
California Institute of Technology

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POSITIONS

Postdoctoral Scholar Research Associate in Physics	Pasadena CA, USA
California Institute of Technology - Division of Physics, Mathematics and Astronomy	2025–present

EDUCATION

Ph.D. in Physics and Space Sciences	Granada, Spain
University of Granada - Instituto de Astrofísica de Andalucía (CSIC)	2022–2025

– Thesis: “Dynamics of black holes and jets: a deep learning method for VLBI imaging”. Advisor: Dr. J. L. Gómez. Final grade: Sobresaliente cum laude.

Visiting Student	Pasadena, CA, USA
California Institute of Technology	Jan-Feb 2024

– Advisor: Prof. K. L. Bouman.

M.S. in Theoretical and Computational Physics	Trieste, Italy
University of Trento - International School for Advanced Studies (SISSA)	2019–2021

– Thesis: “Enhancing the Resolution of CMB Foreground Models: a Stochastic and Iterative Approach”. Advisor: Dr. N. Krachmalnicoff.
Final grade: 110/110 cum laude

Erasmus+ Exchange	Oslo, Norway
University of Oslo	2018–2019

B.S. in Physics	Trento, Italy
University of Trento	2016–2019

– Thesis: “De Sitter Space”. Advisor: Prof. L. Vanzo. Final grade: 110/110 cum laude

SCHOLARSHIPS AND FELLOWSHIPS

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| • Schmidt AI in Science Postdoctoral Fellowship (University of Toronto) | 2025 |
| <i>Postdoctoral research fellowship. Offered (declined in favor of an other postdoc position).</i> | |
| • Doctoral INPhINIT Fellowship - Incoming (“la Caixa” Foundation) | 2022–2025 |
| <i>Scholarship for pursuing a doctoral degree at a Spanish excellence institution.</i> | |
| • Joint Master Program UniTn-SISSA | 2019–2021 |
| <i>Scholarship for attending a master program at University of Trento and SISSA Trieste.</i> | |
| • Erasmus+ scholarship for 10 months at University of Oslo | 2018–2020 |
| <i>Exchange program fellowship.</i> | |

AWARDS

- **Outstanding PhD Theses Awards** Awarded in 2025 by the EHT Collaboration for the development of the KINE imaging method and its successful application to the dynamic imaging of Sgr A*.
- **Best Contribution Award** at the International BASP Frontiers Conference 2025.

SCIENTIFIC COLLABORATIONS

Event Horizon Telescope Collaboration (EHTC)

Collaboration member and member of the General Authors List.

2022–present

SELECTED TALKS

“SgrA* Dynamical Imaging - Methods and validation of the results” Berlin, Germany
(Invited talk) Event Horizon Telescope (EHT) Collaboration Summer Meeting. July 2025

“Evolution, speed, and precession of the parsec-scale jet in the 3C 84 galaxy” Bologna, Italy
(Seminar) Istituto Nazionale di Astrofisica (INAF). July 2025

“Kine: Interferometric Dynamic Imaging with Neural Networks” Villars, Switzerland
(Invited talk) International BASP Frontiers Conference. January 2025

“VLBI Dynamic Imaging with Deep Learning: a new imaging method” Padova, Italy
(Contributed talk) European Astronomical Society Annual Meeting. July 2024

“New tools and prospects for VLBI dynamical imaging” Padova, Italy
(Invited talk) on behalf of the EHTC, European Astronomical Society Annual Meeting. July 2024

“Dynamic Imaging” Mexico City, Mexico
(Invited talk) Event Horizon Telescope (EHT) Collaboration Summer Meeting. May 2024

“Sgr A* Dynamics Project: Imaging report” (online)
(Invited talk) Event Horizon Telescope (EHT) Collaboration Winter Meeting. December 2023

“SgrA* Dynamics Analysis” Taichung, Taiwan
(Contributed talk) Event Horizon Telescope (EHT) Collaboration Summer Meeting. June 2023

“Increasing the Resolution of CMB Foreground Models with GANs” Granada, Spain
(Contributed talk) 8th Meeting in Fundamental Cosmology November 2022

TEACHING

- **Physics Tutor**, University of Trento (Information Engineering and Computer Science Dept.) Spring 2021
Physics (prof. Iuppa)
- **Physics Tutor**, University of Trento (Industrial Engineering Dept.) Spring 2021
Physics I (prof. Gaburro)
- **Physics Tutor**, University of Trento (Cellular, Computational and Integrative Biology Dept.) Fall 2020
Physics I (prof. Miotello)

OUTREACH

- **“The Solar System”** Lectures at elementary school G. Matteotti (Ferrara, Italy) March 2022

LANGUAGES

- **Italian:** mother tongue
- **English:** C2 (reading, listening), C1 (writing, speaking)
- **Spanish:** C1 (reading, listening), B2 (writing, speaking)
- **French:** A1 (reading, listening, writing, speaking)

SELECTED PUBLICATIONS

1. **Foschi, M.**, Zhao, B., Fuentes, A., *et al.* “Turbulent flow in the relativistic jet of 3C 345 from neural video reconstructions of interferometric data”. *Under review in Nature* (2026).
2. **Foschi, M.**, Gómez, J. L., Fuentes, A., *et al.* Evolution, speed, and precession of the parsec-scale jet in the 3C 84 radio galaxy. *A&A* **696**, A17 (2025).
3. The Event Horizon Telescope Collaboration (including **Foschi, M.**). “The persistent shadow of the supermassive black hole of M87 - I. Observations, calibration, imaging, and analysis”. *A&A* **681**, A79 (2024).
4. Yao, J., Krachmalnicoff, N., **Foschi, M.**, *et al.* “FORSE+: Simulating non-Gaussian CMB foregrounds at 3 arcmin in a stochastic way based on a generative adversarial network”. *A&A* **686**, A290 (2024).
5. Fuentes et al., (including **Foschi M.**) “Filamentary structures as the origin of blazar jet radio variability”. *Nat Astro* **7**, 1359–1367. ISSN: 23973366 (11 Nov. 2023).

OTHER PUBLICATIONS

1. Event Horizon Telescope Collaboration (including **Foschi M.**) “First Sagittarius A* Event Horizon Telescope Results. VII. Polarization of the Ring”. *ApJL* **964**, L25 (Apr. 2024).
2. Event Horizon Telescope Collaboration (including **Foschi M.**) “First Sagittarius A* Event Horizon Telescope Results. VIII. Physical Interpretation of the Polarized Ring”. *ApJL* **964**, L26 (Apr. 2024).
3. Paraschos, G. F. & Event Horizon Telescope Collaboration (including **Foschi M.**) et al. “Ordered magnetic fields around the 3C 84 central black hole”. *A&A* **682**, L3 (Feb. 2024).
4. Event Horizon Telescope Collaboration (including **Foschi M.**) “First M87 Event Horizon Telescope Results. IX. Detection of Near-horizon Circular Polarization”. *ApJL* **957**, L20 (Nov. 2023).
5. Lico, R. et al. (including **Foschi M.**) Multi-Wavelength and Multi-Messenger Studies Using the Next-Generation Event Horizon Telescope. *Galaxies* **11**. ISSN: 2075-4434 (2023).
6. Roelofs, F. & Event Horizon Telescope Collaboration (including **Foschi M.**) et al. “Polarimetric Geometric Modeling for mm-VLBI Observations of Black Holes”. *ApJL* **957**, L21 (Nov. 2023).

EHT papers I contributed to as a collaboration member and papers for which I provided minor contributions.

CONFERENCE PROCEEDINGS

1. **Foschi, M.** *New tools and prospects for VLBI dynamical imaging* in *EAS2024* (July 2024), 2469.
2. **Foschi, M.**, Fuentes, A., Zhao, B., *et al.* *VLBI Dynamic Imaging with Deep Learning: a new imaging method for EHT and ngEHT observations* in *EAS2024* (July 2024), 1891.