

Francesco Ubertosi, Ph.D.

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📌 I am a Postdoctoral researcher at the University of Bologna. I focus on feedback from Active Galactic Nuclei in galaxy clusters and galaxy groups, mainly through high spatial resolution X-ray and radio observations. My research interests include the life-cycle of radio galaxies, the physics of the intergalactic medium and supermassive black hole accretion.



Employment History

2023 – present 📌 **Postdoctoral researcher**, University of Bologna.
Project Title: *AGN-sCAN: zooming-in on the AGN-galaxy connection since the cosmic noon*. Supervisors: Prof. M. Gitti, Dr. I. Delvecchio, Dr. I. Prandoni.

Education

2020 – 2023 📌 **Ph.D. Astrophysics, University of Bologna.**
Thesis title: *A comprehensive study of the AGN feedback cycle in galaxy clusters from high resolution X-ray and radio observations*. Supervisors: Prof. M. Gitti, Prof. F. Brighenti.

2022 📌 **Visiting Fellowship (4 months), Harvard & Smithsonian Center for Astrophysics**
Research project: *Jet reorientation events in the central galaxies of clusters and groups: insights from Chandra and VLBA data*. Supervisors: Dr. E. O’Sullivan, Dr. G. Schellenberger.

2018 – 2020 📌 **M.Sc. Astrophysics and Cosmology, University of Bologna.**
Thesis title: *The first Chandra study of Abell 795: a FRO radio galaxy at the center of a sloshing cluster*. Supervisors: Prof. Myriam Gitti, Dr. Eleonora Torresi.

2015 – 2018 📌 **B.Sc. Astronomy, University of Bologna.**
Thesis title: *Scattering processes in Astrophysics - the quasar PKS 0637-752*.

Research Publications 🔗

Journal Articles

- 1 F. Ubertosi *et al.*, “Waking the monster: The onset of AGN feedback in galaxy clusters hosting young central radio galaxies,” *Astronomy & Astrophysics*, vol. 673, A52, A52, May 2023. 🔗 DOI: 10.1051/0004-6361/202345894. arXiv: 2303.04821 [astro-ph.GA].
- 2 F. Ubertosi *et al.*, “Multiple Shock Fronts in RBS 797: The Chandra Window on Shock Heating in Galaxy Clusters,” *The Astrophysical Journal*, vol. 944, no. 2, 216, p. 216, Feb. 2023. 🔗 DOI: 10.3847/1538-4357/acacf9. arXiv: 2212.10581 [astro-ph.GA].
- 3 F. Ubertosi *et al.*, “Chasing ICM cooling and AGN feedback from the macro to the meso scales in the galaxy cluster ZwCl 235,” *Astronomy & Astrophysics*, vol. 670, A23, A23, Feb. 2023. 🔗 DOI: 10.1051/0004-6361/202244023. arXiv: 2211.09141 [astro-ph.GA].
- 4 F. Ubertosi *et al.*, “The Deepest Chandra View of RBS 797: Evidence for Two Pairs of Equidistant X-ray Cavities,” *The Astrophysical Journal Letters*, vol. 923, no. 2, L25, p. L25, Dec. 2021. 🔗 DOI: 10.3847/2041-8213/ac374c. arXiv: 2111.03679 [astro-ph.GA].
- 5 F. Ubertosi *et al.*, “A Chandra study of Abell 795 - a sloshing cluster with an FRO radio galaxy at its centre,” *Monthly Notices of the Royal Astronomical Society*, vol. 503, no. 3, pp. 4627–4645, May 2021. 🔗 DOI: 10.1093/mnras/stab819. arXiv: 2103.08682 [astro-ph.GA].
- 6 M. S. Calzadilla *et al.*, “Testing the Limits of AGN Feedback and the Onset of Thermal Instability in the Most Rapidly Star-forming Brightest Cluster Galaxies,” *The Astrophysical Journal*, vol. 940, no. 2, 140, p. 140, Dec. 2022. 🔗 DOI: 10.3847/1538-4357/ac9790. arXiv: 2207.01624 [astro-ph.GA].

- 7 A. Bonafede *et al.*, “Shock imprints on the radio mini halo in RBS797,” *arXiv e-prints*, arXiv:2310.07773, arXiv:2310.07773, Oct. 2023. [DOI: 10.48550/arXiv.2310.07773](https://doi.org/10.48550/arXiv.2310.07773). arXiv: 2310.07773 [astro-ph.CO].

Conference Proceedings

- 1 F. Ubertosi *et al.*, “The central FRo in the sloshing cluster Abell 795: Indications of mechanical feedback from Chandra data,” 1207, vol. 342, Nov. 2021, pp. 1207–1211. [DOI: 10.1002/asna.20210055](https://doi.org/10.1002/asna.20210055). arXiv: 2111.02160 [astro-ph.GA].

Submitted to Refereed Journals

- 1 F. Ubertosi *et al.*, *Jet reorientation in central galaxies of clusters and groups: insights from VLBA and Chandra data*. Submitted to ApJ, Aug. 2023.
- 2 L. Rosignoli *et al.*, *Deep Chandra observations of Abell 2495: evidence for a sloshing-regulated feedback cycle in a triple- offset galaxy cluster*. Submitted to ApJ, Jul. 2023.

Competitive telescope time allocations

- As Principal Investigator ■ 200 ks of Chandra time (1 proposal, Cycle 25, see [here](#)); 30 h of VLBA time (1 proposal, semester 2023A, see [here](#)); 21.2 h of JVLA (4 proposals in semesters [2022A](#), [2022B](#), [2023A](#), [2023B](#)).
- As co-Investigator ■ Archival Chandra (Cycle 25, PI: Schellenberger; see [here](#)); 9.5 hours of ALMA time (Cycle 10, PI: Gitti); 8 hours of GMRT time (Cycle 44, PI: O’Sullivan); 187 ks of XMM-Newton time (Cycle 22, PI: O’Sullivan).

Skills

- Languages ■ Italian (mother tongue), English (proficient user).
- Computer skills ■ *Data reduction and analysis: Chandra, JVLA, EVN, and VLBA data* (proficient knowledge), LOFAR, e-Merlin, GMRT (advanced knowledge), *XMM-Newton, VLT-MUSE and ALMA* (basic/intermediate knowledge).
Coding: Python (advanced), Fortran90 (basic/intermediate).

Miscellaneous Experience

- Teaching ■ I have co-supervised the Thesis of three M.Sc. students (Rosignoli L., Rotella N., Fornasiero I.) and of a B.Sc. student (Rinaldi F.).
- Scientific Talks ■ Between 2020 and 2023, I have attended several international conferences (see [here](#) for a list), and I have given over 10 seminar talks at international research institutes.
- Referee activity ■ I have refereed scientific papers submitted to MNRAS, Astrophysics and Space Science, MemSAIt, New Astronomy.
- Collaborations ■ I am a member of the Athena Science Working Group 1.3 “AGN feedback in galaxy clusters and groups” (January 2023 - Current), and of the AXIS Science Working Group “Galaxy evolution: feedback in galaxies and clusters” (April 2022 - Current).

Awards and Achievements

- 2022, 4.0 k€ ■ PhD mobility grant *Marco Polo*, University of Bologna.
- 2021, 1.0 k€ ■ Best 12 Physics and Astronomy M.Sc. theses in 2019-2021, University of Bologna.