

Dr Riccardo Arcodia

Curriculum Vitae

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Employment

- 2023–present **Postdoctoral Fellow**, *MIT Kavli Institute for Astrophysics and Space Research*.
NASA Einstein Fellow working on "The awakening of massive black holes".
- 2021–2022 **Postdoc**, *Max Planck Institute for Extraterrestrial Physics*.
Scientific exploitation of eROSITA data and Einstein Probe scientific support.

Education

- 2017–2021 **PhD *summa cum laude* in Astrophysics**, *Max Planck Institute for Extraterrestrial Physics*.
Supervisors: Andrea Merloni, Kirpal Nandra
Defense date: 30 September 2021
Thesis Title: *Accretion onto black holes across the mass scale*
- 2015–2017 **Master's Degree *magna cum laude* in Astrophysics and Space Physics**, *Università degli Studi di Milano-Bicocca*.
Thesis Title: *X-ray absorption study of high-redshift blazars: a way to probe the intergalactic medium*
Supervisors: Sergio Campana, Gabriele Ghisellini
- Two semesters of classes
- Nine months of thesis with defence
- 2012–2015 **Bachelor's Degree in Physics**, *Università degli Studi di Milano-Bicocca*.
Thesis Title: *Study of the X-ray absorption of a complete sample of Swift GRBs*
Supervisors: Sergio Campana, Monica Colpi
- Six semesters of classes
- Two months of thesis with defence

Awards and Prizes

- 2022 **NASA Einstein Fellowship**, class of 2022
- 2022 **ORIGINS Excellence Cluster PhD Award 2022**
- 2021 **IAU PhD Prize 2021** for Division D

Research experience

Approved proposals as Principal Investigator

- 2023-present – NICER Cycle6 : *NICER Follow-up of eROSITA QPE candidates selected through X-ray variability* - Monitoring for a total of ~ 69 ks. To be observed.
- 2022-2023 – NICER Cycle5 : *Continuing the legacy program studying the Quasi-Periodic Eruptions in eRO-QPE1* - Monitoring for a total of ~ 77 ks. Partly observed (work subm.).
- ATCA 2023APRS : *ATCA NAPA follow-up of a confirmed QPE source discovered by eROSITA* - 14 hours. Observed (work subm.).
- 2021-2022 – NICER Cycle 4 : *Evolution of X-ray QPEs from a quiescent galaxy* - Monitoring for a total of ~ 98 ks. Observed (work subm.).
- VLA/23A-0594 : *Searching for nuclear radio activity from the X-ray erupting source eRO-QPE1* - 3.50 hours at Priority A. Observed (work subm.).
- 2020-2021 – XMM-Netwon A020 Large Programme : *A systematic search for X-ray Quasi-Periodic Eruptions in the eROSITA era* - four 130 ks-long anticipated ToOs allocated by the panel. Fully triggered (work subm. and in prep.).
- NICER Cycle 3 : *NICER follow-up of a future eROSITA QPE* - Anticipated ToO monitoring for a total of ~ 48 ks. Not triggered.
- NICER Cycle 3 : *Tracking the period evolution of QPEs* - Allocated for a total of ~ 120 ks. Observed (work subm.).
- MeerKAT radio telescope - 4h DDT observations allocated in Sept. 2021. Observed (work subm.).
- Parkes radio observatory 2021Apr - 8h observations allocated. Observed (work in prep.).
- Chandra Cycle 22 : *The hunt for Quasi-Periodic Eruptions in the eROSITA era* - two 75 ks-long anticipated ToOs allocated by the panel. Not triggered.
- 2019-2020 – NICER Cycle 2 : *The hunt for Quasi-Periodic Eruptions in the eROSITA era* - Intense ToO/DDT monitoring for a total of ~ 186 ks. Published.
- XMM-Netwon A019 : *The hunt for Quasi-Periodic Eruptions in the eROSITA era* - two 90 ks-long anticipated ToOs allocated by the panel, one 90 ks-long DDT approved by the XMM-Newton PS. Published.
- 2018-2019 – XMM-Netwon A018 : *Dissecting the Intergalactic Medium through deep blazar observations* - 123 ks allocated by the panel with priority C, not observed.

Conferences

- 12/2023 *Intermediate-mass black holes* - San Pedro - Oral contribution..
- 06/2023 *Flares and Bursts in Galactic Nuclei* - Princeton - Invited oral contribution.
- 04/2023 *AAS HEAD 20* - Waikoloa - Invited oral contribution.

- 03/2023 *Extreme black holes* - Aspen - Oral contribution.
- 12/2022 *ORIGINS science week* - Seon - Invited oral contribution (prize).
- 08/2022 *IAU General Assembly 2022* - Busan - Invited oral contribution (prize).
- 07/2022 *44th COSPAR Assembly* - Athens - Two oral contribution.
- 07/2022 *From the Dolomites to the event horizon: sledging down the black hole potential well* - Sexten - Invited oral contribution.
- 06/2022 *Black holes under the X-ray microscope* - Madrid - Invited oral review.
- 04/2022 *Intermediate-mass black holes* - San Juan - Oral contribution.
- 07/2021 *Sixteenth Marcel Grossmann Meeting* - Virtual - Oral contribution.
- 06/2021 *European Astronomical Society 2021* - Virtual - Two oral contributions.
- 11/2019 *AGN Spectral States - Unification of Black Holes across the mass scale* - Prague - Oral contribution.
- 09/2019 *X-ray Astronomy 2019 - Current challenges and new frontiers in the next decade* - Bologna - Oral contribution.
- 08/2019 *Quasars in crisis 2019* - Edimburgh - Flash talk and e-Poster.
- 07/2019 *From the Dolomites to the event horizon: sledging down the black hole potential well* - Sexten - Oral contribution.
- 06/2019 *Supermassive Black Holes: environment and evolution* - Corfu - Oral contribution.

Colloquia - Invited Seminars

- 10/2023 *Michigan State Univ.* - Colloquium
- 05/2023 *IAS Princeton* - Invited seminar
- 04/2023 *UC Berkeley* - Invited seminar
- 02/2023 *McGill Univ. Montreal* - Colloquium
- 10/2022 *Univ. of Milan Bicocca* - Invited seminar
- 09/2022 *Racah Institute of Physics* - Invited seminar
- 05/2022 *IoA Cambridge UK* - virtual seminar
- 05/2022 *ESO Garching* - virtual Hypatia colloquium
- 04/2022 *Columbia Univ.* - virtual seminar
- 03/2022 *MIT* - virtual seminar
- 10/2021 *INAF/IASF Milano* - virtual seminar
- 09/2021 *MPE/OPINAS group* - virtual seminar
- 08/2021 *Hebrew University of Jerusalem* - virtual seminar
- 06/2021 *National Astronomical Observatories, China* - virtual seminar
- 06/2021 *Bologna Univ.* - virtual seminar
- 06/2020 *Southampton Univ.* - virtual seminar

05/2020 *Astronomical Institute, Prague* - virtual seminar

Peer reviewer

2022 - present *Nature*, *ApJ*

2020 - present *MNRAS*

Press Releases

2021 EAS 2021 Conference: eROSITA press release. Speaker.

2021 MPE press release - "eROSITA witnesses the awakening of massive black holes". Writing.

The content related to this press release was shared, according to Nature metrics, by 44 tweets (divided in 80% from the public and 20% from scientists, including "Nasa Universe") and more than 9 between news and blogs of 5 different languages (including "Vice Science").

Pre-Doctorate Research

2017 Nine-months stage at the Brera Observatory (INAF-OAB) in Merate to work on my Master's Degree thesis work, under the supervision of Sergio Campana and Gabriele Ghisellini.

2015–2016 Occasionally joined the Brera Observatory (INAF-OAB) in Merate to work on the publication of a scientific article based on my Bachelor's Degree graduation thesis, while attending the first year of Master's Degree classes.

2015 Two-months stage at the Brera Observatory (INAF-OAB) in Merate to work on my Bachelor's Degree graduation thesis, supervised by Sergio Campana.

Outreach Activities

2016 Co-organizer of a stand on Gravitational Waves at the 2016 European Researchers Night event MEETmeTONIGHT, in Milan.

2016 Staff member at Pint of Science 2016, in Milan.

Publications

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First authored publications

6 *The complex time and energy evolution of quasi-periodic eruptions in eRO-QPE1*

R.Arcodia, G. Miniutti, G. Ponti et al.; *A&A*, 6362, A49 (2022)

5 *X-ray quasi-periodic eruptions from two previously quiescent galaxies*

R.Arcodia, A. Merloni, K. Nandra et al.; *Nature*, 592, 704 (2021)

4 *Do stellar-mass and super-massive black holes have similar dining habits?*

R.Arcodia, G. Ponti, A. Merloni, K. Nandra; *A&A*, 638, A100 (2020)

3 *Testing the disk-corona interplay in radiatively-efficient broad-line AGN*

- R.Arcodia**, A. Merloni, K. Nandra, G. Ponti; A&A, 628, A135 (2019)
- 2 *X-ray absorption towards high-redshift sources: probing the intergalactic medium with blazars*
- R.Arcodia**, S. Campana, R. Salvaterra, G. Ghisellini; A&A, 616, A170 (2018)
- 1 *The dependence of gamma-ray burst X-ray column densities on the model for Galactic hydrogen*
- R.Arcodia**, S. Campana, R. Salvaterra; A&A, 590, A82 (2016)

Technical Experience

OS Linux/Unix, Windows, Mac OS X

Programming Python; some experience with C++ and Idl

Typesetting L^AT_EX, Microsoft Office

Facilities XMM-Newton, eROSITA, Swift-XRT, NICER, NuSTAR

Data analysis X-rays: Xspec, BXA, Ultranest, Sherpa, HeaSoft; TopCat, SAOimage ds9

Languages

Italian	Native speaker	
English	Fluent	
German	Good command	A2/B1 course
French	Good command	High school second language