

Dr Riccardo Arcodia

Curriculum Vitae

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✉ rarcodia@mit.edu

Employment

- 2023–present **NASA Einstein 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 (~ 115 k\$/yr)
- 2022 **ORIGINS Excellence Cluster PhD Award 2022** (2 k€)
- 2021 **IAU PhD Prize 2021** for Division D

Service Activities

International collaborations

- 2024 - present NICER Users Group member
- 2023 - present Member of the LGWA multi-messenger astronomy working group
- 2023 - present Member of the AXIS TDAMM X-ray Telescope Science Team
- 2023 - present eROSITA-DE individual external collaborator
- 2019 - 2022 eROSITA-DE member

Organizing committees

- 2024-2025 SOC member of international conference "X-ray QPEs and extreme, repeating extragalactic transients"; June 2025; Madrid, Spain
- 2024 Co-organizer of the Astro-ML workshop "Freedom Trail of Code: Boston Astrophysics x Machine Learning Hackathon 2024"; Cambridge, USA
- 2023 Co-organizer of the first "BABAM! Boston-Area Blackhole Accretion Meeting" workshop; Cambridge, USA

Peer reviewer

- 2020 - present Panelist: XMM-Newton; Hubble Space Telescope; OPTICON Telescopes network
- 2020 - present Reviewer: *Nature*, *ApJ*, *ApJ Letters*, *A&A*, *MNRAS*

Research experience

Approved guest observer proposals as Principal Investigator

- 2023 - present
 - Chandra Cycle 26: ~ 10 ks allocated + ~ 0.5 h VLA. To be observed.
 - XMM AO23: ~ 116 ks allocated. Observed (work in prep.).
 - XMM AO23: ~ 68 ks allocated + ~ 2 h with VLA. To be observed.
 - VLA/24B-353: ~ 3.5 h allocated. To be observed.
 - ATCA: ~ 25 h allocated in two proposals. Observed (work in prep.).
 - Swift Cycle 20: ~ 70 ks allocated. To be observed.
 - NICER Cycle 6: ~ 69 ks allocated. To be observed.
- 2022-2023
 - NICER Cycle 5: ~ 77 ks allocated. Published as senior author.
 - ATCA 2023APRS: 14h allocated. Published as 1st author.
- 2021-2022
 - NICER Cycle 4: ~ 98 ks allocated. Published as senior author.
 - VLA/23A-0594: - 3.50 hours at Priority A. Published as senior author.
- 2020-2021
 - XMM-Newton A020 Large Programme: 4x130 ks anticipated ToOs allocated. Fully triggered, published as 1st author.
 - NICER Cycle 3: ~ 120 ks allocated. Published as senior author.

- Chandra Cycle 22: 2x75 ks-long anticipated ToOs allocated by the panel. Not triggered.
- 2019-2020 – NICER Cycle 2: - ToO monitoring for a total of ~ 186 ks. Published as 1st author.
- XMM-Netwon A019: 2x90 ks anticipated ToOs. Published as 1st author.
- 2018-2019 – XMM-Netwon A018: 123 ks in priority C, not observed.

Selected Colloquia - Invited Seminars

- 02/2025 *Univ. of Michigan* - Colloquium
- 01/2025 *Carnegie Observatories* - Colloquium
- 11/2024 *CfA* - Invited UMBRELA seminar
- 02/2024 *STSci* - Invited seminar
- 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
- 08/2021 *Hebrew University of Jerusalem* - virtual seminar
- 06/2021 *National Astronomical Observatories, China* - virtual seminar
- 06/2021 *Bologna Univ.* - virtual seminar

Selected conferences

- 10/2024 *5th gravi-gamma-nu workshop* - Bari - Invited.
- 09/2024 *First Results from SRG/eROSITA* - Munich - Invited.
- 09/2024 *Galactic and extragalactic X-ray transients* - Warsaw - Invited.
- 09/2024 *TDEs and Nuclear Transients* - Heraklion - Invited.
- 06/2024 *AAS 244* - Madison, USA - Contributed + press release.
- 04/2024 *TDE24 Conference and Programme* - KITP Santa Barbara - Invited.
- 12/2023 *Intermediate-mass black holes* - San Pedro - Contributed.
- 06/2023 *Flares and Bursts in Galactic Nuclei* - Princeton - Invited.
- 04/2023 *AAS HEAD 20* - Waikoloa - Invited.
- 03/2023 *Extreme black holes* - Aspen - Contributed.

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

Press Releases

- 2024 AAS 244 Conference press event. Speaker.
- 2024 MPE press release - "Massive black holes in low-mass galaxies: what happened to the X-ray Corona?". Writing.
- 2021 EAS 2021 Conference: eROSITA press release. Speaker.
- 2021 MPE press release - "eROSITA witnesses the awakening of massive black holes". Writing.

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.

Supervision & Mentorship

Direct supervision

- 2024 MIT UROP spring student Kush Khamesra

Mentorship

- 2023 - present MIT PhD student Joheen Chakraborty (superv. Prof. Kara)
- 2023 - present MPE PhD student Zsofi Igo (superv. Dr Merloni)
- 2023 - present MPE PhD student Pietro Baldini (superv. Dr Rau)

Equity & Inclusion initiatives

2024 Co-proposer for FY 2024 NHFP funds for IDEA working group

Publications

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Stats 10/24 268 citations from 10 1st author refereed publications

2226 citations from 49 total refereed publications

First three authors

- *Fragments of harmony amid apparent chaos: a closer look at the X-ray quasi-periodic eruptions of the galaxy RX J1301.9+2747*
M. Giustini, G. Miniutti, **R.Arcodia**, et al.; accepted A&A, arXiv:2409.01938
- *Ticking away: the long-term X-ray timing and spectral evolution of eRO-QPE2*
R.Arcodia, I. Linial, G. Miniutti, et al.; A&A, 690, A80 (2024)
- *Cosmic hide and seek: The volumetric rate of X-ray quasi-periodic eruptions*
R.Arcodia, A. Merloni, J. Buchner et al.; A&A, 684, L14 (2024)
- *Testing EMRI Models for Quasi-periodic Eruptions with 3.5 yr of Monitoring eRO-QPE1*
J. Chakraborty, **R.Arcodia**, E. Kara et al.; ApJ, 965, 12 (2024)
- *The more the merrier: SRG/eROSITA discovers two further galaxies showing X-ray quasi-periodic eruptions*
R.Arcodia, Z. Liu, A. Merloni et al.; A&A, 684, A64 (2024)
- *Massive black holes in nuclear star clusters. Investigation with SRG/eROSITA X-ray data*
N. Hoyer, **R.Arcodia**, S. Bonoli et al.; A&A, 682, A36 (2024)
- *O Corona, where art thou? eROSITA's view of UV-optical-IR variability-selected massive black holes in low-mass galaxies*
R.Arcodia, A. Merloni, J. Comparat et al.; A&A, 681, A97 (2024)
- *Alive and kicking: A new QPE phase in GSN 069 revealing a quiescent luminosity threshold for QPEs*
G. Miniutti, M. Giustini, **R.Arcodia** et al.; A&A, 674, L1 (2023)
- *Repeating tidal disruptions in GSN 069: Long-term evolution and constraints on quasi-periodic eruptions' models*
G. Miniutti, M. Giustini, **R.Arcodia** et al.; A&A, 670, A93 (2023)
- *The complex time and energy evolution of quasi-periodic eruptions in eRO-QPE1*
R.Arcodia, G. Miniutti, G. Ponti et al.; A&A, 662, A49 (2022)

- *X-ray detection of a nova in the fireball phase*
O. Koenig, J. Wilms, **R.Arcodia** (alph.) *Nature*, 605, 7909 (2021)
- *X-ray quasi-periodic eruptions from two previously quiescent galaxies*
R.Arcodia, A. Merloni, K. Nandra et al.; *Nature*, 592, 704 (2021)
- *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)
- *Testing the disk-corona interplay in radiatively-efficient broad-line AGN*
R.Arcodia, A. Merloni, K. Nandra, G. Ponti; *A&A*, 628, A135 (2019)
- *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)
- *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)

Selected white & collaboration papers

- *The Lunar Gravitational-wave Antenna: Mission Studies and Science Case*
P. Ajith, P. Amaro Seoane, M. Arca Sedda, arXiv:2404.091814 (2024).
- *Prospects for Time-Domain and Multi-Messenger Science with AXIS*
AXIS TDAMM group, arXiv:2311.07658 (2024).
- *The SRG/eROSITA all-sky survey. First X-ray catalogues and data release of the western Galactic hemisphere*
A. Merloni, G. Lamer T. Liu, *A&A*, 682, A34 (2024).
- *The eROSITA Final Equatorial-Depth Survey (eFEDS): The AGN Catalogue and its X-ray Spectral Properties*
T. Liu, J. Buchner, K. Nandra, *A&A*, 661, A5 (2022).
- *The eROSITA Final Equatorial-Depth Survey (eFEDS): Identification and characterization of the counterparts to the point-like sources*
M. Salvato, J. Wolf, t. Dwelly, *A&A*, Volume 661, A3 (2022).
- *The 16th Data Release of the Sloan Digital Sky Surveys: First Release from the APOGEE-2 Southern Survey and Full Release of eBOSS Spectra*
R. Ahumada, C. Allende Prieto, A. Almeida et al., *APJS*, 249, 3 (2020).
- *The final SDSS-IV/SPIDERS X-ray point source spectroscopic catalogue*
J. Comparat, A. Merloni, T. Dwelly et al., *A&A*, 636, A97 (2020).

Languages

Italian Native speaker

English Fluent
German Good command
French Good command

A2/B1 course
High school second language