

Roberto Gilli - Curriculum Vitae



PERSONAL INFORMATION

Date of birth: 25/01/1973 - Nationality: Italian

Istituto Nazionale di Astrofisica – Osservatorio di Astrofisica e Scienza dello Spazio (INAF - OAS) di Bologna
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CURRENT POSITION

INAF— OAS
Primo ricercatore - IV fascia stipendiale
Anzianità nell'inquadramento: anni 2, mesi 10, giorni 0

WORK EXPERIENCE

Since 2019: Primo Ricercatore, INAF — OAS
2017 — 2018: Ricercatore, INAF — OAS
2005 — 2017: Astronomo, INAF — Osservatorio Astronomico di Bologna (OABO)
2002 — 2005: Astronomo, INAF — Osservatorio Astrofisico di Arcetri, Firenze
2001 — 2002: Postdoc at The Johns Hopkins University, Dept. of Physics and Astronomy, Baltimore, MD.

EDUCATION AND TRAINING

Jan 31, 2001: PhD degree in Astronomy at the Firenze University, thesis title: “*Obscured Active Galactic Nuclei and the synthesis models of the cosmic X-ray background*” (supervisors Prof. M. Salvati and Prof. F. Pacini)
1998 — 2000: Postgraduate studies at the Firenze University
Jul 22, 1997: Master Degree in Astronomy (110/110 cum laude), thesis title: “*The iron Ka line of AGN and the cosmic X-ray background*” (in Italian; supervisors Prof. G. Setti and Prof. A. Comastri)
1992 — 1997: Undergraduate studies at the Bologna University

PERSONAL SKILLS

Languages

Italian: mother tongue
English: advanced level (listening/reading/speaking/writing)
French: basic
Spanish: basic

Digital skills

Programming and plotting: Fortran, Supermongo (advanced); C+, Python (basic). Astronomical software: CIAO, XSPEC, MARX, Topcat, DS9 (advanced); IRAF (basic). Good knowledge of html. Websites (built and managed): <http://exb.oas.inaf.it/> , <http://j1030-field.oas.inaf.it/>

ADDITIONAL INFORMATION

Research Area

Physics and evolution of Active Galactic Nuclei (AGN); BH/galaxy co-evolution; AGN and galaxy clustering; population synthesis models of the X-ray background; the high-redshift Universe; early supermassive black holes, large scale structures, galaxy proto-clusters.

Publications as of Jun 2023

More than 250 papers on refereed journals (22 as first author) that collected more than 20,900 (>1,900) citations. H-index = 72 (source ADS).

Successful observing proposals as PI

- **19 successful observing programs as a PI at major astronomical facilities operating from the radio to the X-ray band** (plus participation to >50 observing programs as a co-I)

2021: LBT(LUCI+SOUL), 6hr, “Star formation, AGN feedback, and galaxy assembly: the turbulent youth of a protocluster at $z=1.7$ ”

2019: LOFAR, 8hr, “Galaxy formation, ICM heating and AGN feedback: the turbulent youth of a proto-cluster at $z=1.69$ ”

2018: ALMA, Cycle 6, 10hr, “The Making of a local galaxy cluster: star formation and AGN feedback in a proto-cluster at $z=1.69$ ”

2017: LBT(MODS+LUCI), 52hr, Strategic Program, “The wide and deep survey around J1030: an INAF-LBT legacy field”

2015: Chandra, Cycle 17, 500ks, Large Program, “QSOs at $z=6$: black hole growth and feedback in the early Universe”

2015: LBT(LUCI), 8hr, “The brightest galaxy at the reionization epoch”

2015: CFHT(WIRCAM), 6hr, “The large-scale environment of QSOs at $z\sim 6$ ”

2015: ALMA, Cycle 3, 5hr, “The early coevolution of galaxies and black holes”

2013: CFHT(WIRCAM), 6hr, “The large-scale environment of QSOs at $z\sim 6$ ”

2013: LBT(MODS), 12hr, “The primordial environment of supermassive black holes: an LBC legacy”

2012: LBT(MODS), 2012B, 4hr, “High- z black holes in wide area surveys: a novel selection technique”

2012: LBT/LBC, 2012A, 12hr, “Mapping the primordial environment of QSOs at $z\sim 6$ ”

2011: ALMA, Cycle 0, 0.1hr, “A laboratory to study BH-galaxy coevolution in the early Universe”

2010: VLT(FORS2), P87, 20hr, “X-ray emitting i-band dropouts: a shortcut to select QSOs at $z\sim 6$ ”

2010: XMM-Newton, AO10, 80ks, “[Ne V]-selected heavily obscured QSOs at the epoch of the X-ray background”

2009: Suzaku, AO3, 90ks, “Another Compton-thick AGN just around the corner”

2008: Chandra, Cycle 10, 80ks, “Luminous Compton-thick QSOs at $z\sim 1$ ”

2006: TNG(DOLORES), AOT13, 4hr, “Tracing an AGN cosmic filament at $z=0.3$ ”

2005: Chandra, Cycle 7, 150ks, “Tracing the X-ray cosmic web at $z=0.3$ ”

Large observing programs as co-I

2022: Chandra 710ks, “Unveiling the connection between AGN and massive gas reservoirs in protoclusters”, PI F. Vito
 2020: XMM-Newton, 2.4Ms “HYPerluminous quasars at the Epoch of ReionizatiON”, PI L. Zappacosta
 2018: Chandra, 700ks, “The spiderweb protocluster”, PI P. Tozzi
 2018: XMM-Newton, 1.6Ms, “Supermassive Black Holes Winds in the X-rays”, PI M. Brusa
 2017: Chandra, 429ks, “A Reliable X-ray View of the First Quasars”, PI N. Brandt
 2015: XMM-Newton, 1.3Ms, “Going beyond COSMOS with the XMM-Newton-SERVS survey of W-CDF-S, XMM-Newton-LL and ELAIS-S1”, PI N. Brandt
 2014: Chandra, 1.25Ms “Black hole fingerprints from cosmic dawn to cosmic noon”, PI G. Hasinger
 2013: Chandra, 3Ms, “The Chandra Deep Field-South: A Peerless Ultradeep Survey for Exploring the Distant X-ray Universe”, PI N. Brandt
 2012: XMM-Newton, 300ks, “The XMM-Newton-ATLAS survey: AGN - star-formation coevolution”, PI I. Georgantopoulos
 2011: Herschel, 193.6 hr, “Herschel+CANDELS: Unraveling the physical processes that regulate star formation and AGN activity in ordinary galaxies at $z=2$ ”, PI M. Dickinson
 2008: XMM-Newton, 3Ms, “The ultradeep survey in the CDFS: an XMM-Newton legacy”, PI A. Comastri
 2007: Herschel, 362.6 hr, “The Great Observatories Origins Deep Survey : Far-Infrared Imaging with Herschel”, PI D. Elbaz
 2006: Chandra, 1.8Ms, “The Chandra-COSMOS survey”, PI M. Elvis
 2004: XMM-Newton, 1.5Ms, “The XMM-Newton wide field survey in the COSMOS field”, PI G. Hasinger

Seminars and colloquia

-22 seminars/colloquia at national and international institutes

2023: MoRe - ASI series (online)
 2022: Harvard Smithsonian CfA, Cambridge, MA, USA (online)
 2020: National Observatory of Athens (online)
 2017: Scuola Normale Superiore, Pisa, Italy
 2017: SISSA, Trieste, Italy
 2016: INAF - Istituto di Radio Astronomia, Bologna, Italy
 2016: Yale University, New Haven, NJ, USA
 2015: Harvard Smithsonian CfA, Cambridge, MA, USA
 2014: INAF - Osservatorio Astronomico di Roma, Italy
 2014: INAF - Osservatorio Astrofisico di Arcetri, Italy
 2011: Università La Sapienza, Rome, Italy
 2011: Institute of High Energy Physics, Beijing, China
 2010: Johns Hopkins University, Baltimore, MD, USA
 2010: Goddard Space Flight Center, Greenbelt, MD, USA
 2008: INAF – Osservatorio Astrofisico di Arcetri, Firenze, Italy
 2008: INAF – Osservatorio Astronomico di Brera, Merate, Italy
 2008: University of Innsbruck, Innsbruck, Austria
 2008: European Southern Observatory, Garching, Germany
 2003: Harvard Smithsonian CfA, Cambridge, MA, USA
 2002: Institute of Radio Astronomy, Bologna, Italy
 2001: Osservatorio Astronomico di Brera, Milano, Italy
 1999: RIKEN, Tokyo, Japan

Invited participations at conferences

- **22 invitations as speaker/ moderator at national and international conferences** (plus 2 contributed talks per year on average)

2023: Invited talk at the workshop “HSC meeting 2023” (Bologna, Italy, May 24-25)
 2020: Invited talk at the workshop “Getting ready to descend the slippery slope of multi-messenger cosmological black holes data” (Seston, Italy, Feb 10-14)

2019: Invited talk at the “Memorial Symposium to Honor Riccardo Giacconi”, National Academy of Science (Washington D.C., USA, May 29-30)

2019: Invited talk at the workshop “Accretion History of AGN (AHA)” (Miami, FL, USA, Oct 17-19)

2018: Invited talk at the workshop “Accretion History of AGN (AHA)” (Miami, FL, USA, Oct 18-20)

2018: Invited talk at the workshop “The interstellar medium of high-z galaxies” MIAPP (Munich, Germany, Apr-May)

2017: Invited talk at the workshop “The remarkable life of a BCG” (Sexten, Italy, Feb 20-24)

2016: Invited review at the “12th AGN National Conference” (Napoli, Italy, Sep 26-29)

2015: Discussion panelist. “X-ray surveys of the hot and energetic Cosmos”, IAU focus meeting 6 (Honolulu, HI, USA, Aug 5-6)

2012: Discussion chair. “Illuminating the AGN/galaxy connection” workshop (Ringberg, Germany, Dec 3-5)

2012: Invited review. “X-ray astronomy: towards the next 50 years” conference (Milano, Italy, Oct 1-5)

2012: Concluding remarks. “Half a century of X-ray astronomy” conference (Mykonos, Greece, Sep 17-21)

2011: Invited talk at the conference “The Sun, the Stars, the Universe and General Relativity” (Beijing, China, Oct 11-15)

2011: Invited talk at the conference “Bridging electromagnetic astrophysics and cosmology with gravitational waves” (Milano, Italy, March 28-30)

2011: Invited talk at the conference “Present status and future prospects in X-ray astronomy” (Roma, Italy, March 14-16)

2010: Solicited talk at the conference “9th AGN National Conference” (Ferrara, Italy, May 24-27)

2009: Invited talk at the conference “X-ray astronomy 2009” (Bologna, Italy, Sep 7-11)

2008: Invited talk at the meeting “Exploring the hot Universe with IXO” (Garching, Germany, Sep 17-19)

2007: Invited talk at the “Journèe franco-italienne sur la recherche et cooperation” meeting (Marseille, Oct 19)

2006: Discussion chair (clustering session) at the workshop “Extragalactic X-ray surveys” (Boston, Nov 6-8)

2002: Invited review at the “6th AGN National Conference” (Como, Italy, Jun 11-14)

2002: Invited review at the 34th COSPAR meeting (Houston, TX, USA, Oct 10-19)

Conference organizing committees

- 21 participations to SOCs (2 co-chaired), 6 participations to LOCs (1 chaired)

2023: SOC co-chair of the workshop “High-z QSOs” (Barcelona, Spain, May 18-19)

2022: SOC member of the workshop “Hot Topics in Astrophysics” (Sexten, Italy, Jul 25-29)

2022: SOC member of the event “In Memory of Riccardo Giacconi - Dedicating the Sexten Center for Astrophysics to Riccardo Giacconi” (Sexten, Italy, Jul 25)

2022: SOC member of the COSPAR Meeting E1.11 “Supermassive Black Holes at High-z” (Athens, Greece, Jul 16-24)

2022: SOC member of the “14th AGN National Conference” (Firenze, Italy, May 23-27)

2020: SOC chair of the workshop “Technological advances in X-ray astronomy” (online, Jul 15-16)
<http://cxb.oas.inaf.it/xtech20.html>

2019: SOC co-chair of the conference “X-ray astronomy 2019” (Bologna, Italy, Sep 8-13)

2019: SOC member of the workshop “Hot Topics in Astrophysics” (Sexten, Italy, Jul 15-19)

2019: LOC member of the conference “Views on the interstellar medium in galaxies in the ALMA era” (Bologna, Italy, Sep 2-6)

2017: SOC member of the “IV workshop on mm- and submm-astronomy in Italy” (Bologna, Italy, Nov 7-10)

2015: SOC member of the conference “Demographics of AGN from multi-wavelength surveys” (Chania, Greece, Sep 21-24)

2014: SOC member of the “11th AGN National Conference” (Trieste, Italy, Sep 23-26)

2014: SOC member, workshop “The first billion year of galaxies and black holes” (Sexten, Italy, June 30-July 4)

2012: SOC member of the workshop “The high-redshift Universe” (Bologna, Italy, Jun 5-6)

2011: LOC member of the workshop “X-ray astrophysics up to 511 keV” (Ferrara, Italy, Sep 14-16)

2010: LOC chair of the “9th AGN National Conference” (Ferrara, Italy, May 24-27)

2009: SOC member of the workshop “The Wide Field X-ray Telescope” (Bologna, Italy, Nov 25-26)

2009: LOC member of the conference “X-ray 2009” (Bologna, Italy, Sep 7-11)

2008: SOC member of the “8th AGN National Conference” (Torino, Italy, May 19-22)

2007: LOC member of the workshop “Symbol-X: the hard X-ray Universe in focus” (Bologna, May 14-16)

2004: LOC member of the “6th AGN National Conference” (Volterra, May 25-28)

Teaching

- Frequent teaching at the Universities of Bologna and Ferrara

- 2023: Lecture (2hrs) on new X-ray astrophysics mission concepts, Bologna University (UniBo)
- 2022: Lecture (2hrs) on new X-ray astrophysics mission concepts, UniBo
- 2021: Lectures (6hrs) on supermassive black holes for graduate students, Ferrara University (UniFe)
- 2018: Lectures (6hrs) on supermassive black holes for graduate students, UniFe
- 2016: Lectures (6hrs) on supermassive black holes for graduate students, UniFe
- 2015: Lectures (5hrs) on high-redshift AGN for graduate students, UniBo
- 2015: Lectures (6hrs) on supermassive black holes for graduate students, UniFe
- 2008: Course on High-Energy Astrophysics (40hrs), UniFe
- 2007: Lectures (4hrs) on AGN/galaxy clustering and the cosmic X-ray background for graduate students at UniBo
- 2006: Lectures (4hrs) on X-ray AGN spectra and the X-ray background for undergrads at UniBo

Supervision activities

- 19 fellowships/studentships supervised (4 postdocs, 5 PhDs, 10 masters)

- 2022: Postdoc supervisor of Marisa Brienza, INAF-OAS
- 2021: PhD co-supervisor of Giovanni Mazzolari, UniBo
- 2020: PhD co-supervisor of Matilde Signorini, UniFi
- 2019: PhD co-supervisor of Quirino D'Amato, UniBo
- 2019: Postdoc supervisor of Stefano Marchesi, INAF-OAS
- 2017: Master Thesis (Laurea Magistrale) co-supervisor of Alessandro Peca, UniBo
- 2017: Master Thesis co-supervisor of Quirino D'Amato, UniBo
- 2017: PhD supervisor of Riccardo Nanni, UniBo
- 2016: Postdoc supervisor of Barbara Balmaverde, INAF-OAS
- 2016: Master Thesis co-supervisor of Riccardo Nanni, UniBo
- 2016: Master Thesis co-supervisor of Chiara Circosta, UniBo
- 2016: Master Thesis co-supervisor of Luca Bortuzzo, UniBo
- 2014: Postdoc supervisor of Nico Cappelluti, INAF-OAS
- 2013: Master Thesis co-supervisor of Chiara Mongardi, UniBo
- 2013: Master Thesis co-supervisor of Laura Morselli, UniBo
- 2012: Master Thesis co-supervisor of Simone Giacchè, UniFe
- 2012: PhD co-supervisor of Fabio Vito, UniBo
- 2011: Master Thesis co-supervisor of Fabio Vito, UniBo
- 2009: Master Thesis co-supervisor of Sara Cazzoli, UniBo

Memberships in candidate evaluation / recruiting committees

- 2023: External examiner for candidate PhD thesis (A. Vega Alonso Tetilla), Southampton University
- 2022: Member of the selection committee for a staff researcher position at INAF-OAS
- 2017 — 2022: Referee for the Research Executive Agency of the European Commission
- 2020 — 2021: Referee for the Paris Region Fellowship Program (Ile-de-France Paris region)
- 2019: External referee for candidate PhD thesis (T. Ananna), Yale University
- 2019: External referee for candidate PhD thesis (A. Travascio), Roma La Sapienza University
- 2017: Member of the PhD Dissertation Committee, Bologna University, Dept. of Physics and Astronomy
- 2017: Member of the PhD Selection Committee, Bologna University, Dept. of Physics and Astronomy
- 2016: Member of the PhD Dissertation Committee, Geneva University
- 2016: Referee for the Royal Society (UK)
- 2016: Referee for the Swiss National Science Foundation
- 2015: Referee for the Chilean National Science and Technology Commission
- 2015: Member of the PhD Dissertation Committee, Ferrara University, Dept. of Physics
- 2013: Member of the PhD Dissertation Committee, Ferrara University, Dept. of Physics

Memberships in observing time allocation committees

2023: External reviewer for HST Cycle 31
2023: External reviewer for JWST Cycle 2
2023: Participation to ALMA, TNG, LBT distributed peer reviews
2022: Participation to ESO, ALMA, TNG distributed peer reviews
2021: Participation to the ALMA distributed peer review
2015 — 2017: Member of the Italian Time Allocation Committee for the LBT, TNG and REM
2014: Member of the Subaru Telescope TAC (category C-4)
2009: Member of the XMM-Newton OTAC, panel G1 (Cosmology, Extragalactic Deep Fields and Area Surveys) for the 9th Announcement of Opportunity (AO9)
2008: Member of the XMM-Newton OTAC, panel G1 for AO8
2008: Member of the Chandra OTAC, panel 13 (AGN) for observing Cycle 10
2005: Member of the XMM-Newton OTAC, panel E2 (AGN, Quasars, BL-Lac Objects & X-Ray Background) for AO5
2004: Member of the XMM-Newton OTAC, panel E2 for AO4

Memberships in international collaborations

- STAR-X MIDEX mission concept, selected by NASA in Aug 2022 for Phase A study: <http://star-x.xraydeep.org/> (PI W. Zhang, GSFC)
- Advanced X-ray Imaging Satellite (AXIS) probe (PI C. Reynolds, U. Maryland) - AGN SWG
- Wide Field X-ray Telescope mission concept (PI R. Giacconi) - core team
- Chandra-COSMOS-Legacy collaboration (since 2012 - PI F. Civano)
- GOODS-Herschel (since 2010, PI D. Elbaz)
- Euclid consortium (since 2010)
- Chandra/XMM-Newton — COSMOS (since 2005 - PIs M. Elvis, G. Hasinger)
- Chandra Deep Field South (CDFs) collaboration (since 2000; PIs R. Giacconi, N. Brandt)
- XMM-CDFS (since 2009, PI A. Comastri)
- Athena mission concept (SWG 2.1 and 2.2)
- STAR-X mission concept (version 1) proposed to the NASA MIDEX call 2016 (16-APMIDEX16-0006 - PI W. Zhang, GSFC)
- XMM-Newton-SUBWAYS (PI M. Brusa, DIFA UniBo)
- XMM-Newton-HYPERION (PI L. Zappacosta, INAF-OARoma)
- J1030 deep field (PI)

Management and leadership experience

- Since 2022: Coordinator of the Objective 3-1 WP (High-z Protoclusters) in the STAR-X mission concept (8 members)
- Since 2017: Coordinator of the ‘J030 deep field’ collaboration (30 members): <http://j1030-field.oas.inaf.it/team.html>
- 2007-2010: Coordinator of the ‘High-z QSOs and survey’ WP in the WFXT mission concept (8 members)

Appointments

Since Mar 2022: Visiting Scientist at JHU Baltimore

Since Feb 2023: President of INAF National Scientific Committee 1 (CSN1) “Galaxies and Cosmology”

Funding ID as a Principal Investigator

- **430 kEUR collected as a PI**

2018: 220 kEUR from ASI - INAF 2017-14-H.0
2017: 13 kEUR from ASI - INAF I/037/12/0
2015: 10 kEUR from ASI - ASI-INAF I/037/12/0
2014: 57 kEUR from ASI - ASI-INAF I/037/12/0
2013: 103 kEUR from INAF - PRIN-INAF 2012
2010: 11 kEUR from ASI - ASI-INAF I/009/10/0
2009: 15 kEUR from ASI - ASI-INAF I/008/06

Editorial activities

2010: Proceedings editor of the workshop “The Wide Field X-ray Telescope” (Bologna, Nov 25-26)
From 2001: Regular referee for A&A, MNRAS, ApJ, ApJL

Press releases

2022: NASA/Chandra (co-I; PI P. Tozzi) “Spiderweb Galaxy Field: Feasting Black Holes Caught in Galactic Spiderweb”
2020: ESO (co-I, PI M. Mignoli) “ESO telescope spots galaxies trapped in the web of a supermassive black hole”
2020: NASA/Chandra (co-I, PI E. Lambrides) “Cases of Black Hole Mistaken Identity”
2019: NASA/Chandra (PI) “Black Hole Nurtures Baby Stars a Million Light Years Away”
2019: NASA/Chandra (co-I ; PI F. Vito) “Cloaked Black Hole Discovered in Early Universe using NASA's Chandra”
2015: ESA/STScI (co-I, PI M. Chiaberge) “Merging galaxies break radio silence”
2014: Media INAF (PI), “Il lontano buco nero nel suo bozzolo galattico”
2001: ESO (co-I, PI P. Rosati) “Chandra and the VLT Jointly Investigate the Cosmic X-Ray Background”

Outreach

2023: Lecture on “JWST, exoplanets and SMBHs” at the Scuola Media ‘D. Alighieri’, Ferrara (Feb 3).
2020: Video interview for the RAI TV magazine ‘Newton’ on BH positive feedback
2020: Video interview for the online magazine ‘The Cosmic Companion’ on early galaxy overdensities
2019: Chandra blog: <https://chandra.harvard.edu/blog/node/744>
2017: Video interview for Media INAF on faint X-ray flash in the CDFS
2005: Participation to ‘La Scienza in Piazza’ (Bologna city center)
2002: Article on Scientific American / Le Scienze (G. Hasinger & R. Gilli), “The cosmic reality check”