Dr. Manuela Bischetti

PhD in Astronomy, Astrophysics and Space Science

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ORCID

Current position

Postdoctoral researcher since 2nd January 2020 in the research group "Galaxy evolution - Active galactic nuclei and their host galaxies" at INAF Osservatorio Astronomico di Trieste OATs (Italy), under the research grant PRIN MIUR 2017 BLACKOUT, contract 2017PH3WAT, "Analysis and interpretation of interferometric, (sub-)millimetre data and near-infrared data of AGN and their host galaxies".

Career and Education

- **Postdoctoral researcher**
  INAF Osservatorio Astronomico di Roma OAR (Italy) *Jan 2019–Dec 2019*
  Research grant "X-ray, optical and millimetre properties of hyper-luminous quasars"

- **Visiting student at Kavli Institute for Cosmology Cambridge KICC**
  Cambridge University (UK) *May 2017-May 2018*
  Research project "Probing the occurrence of AGN-feedback in the early Universe"

  Supervisor: Prof. R. Maiolino (KICC and Cavendish Laboratory, Cambridge University)

- **European PhD in Astronomy, Astrophysics and Space Science**
  INAF OAR, Università di Roma Tor Vergata (Italy), KICC *Nov 2015–Oct 2018*
  Awarded on 21 December 2018 with "excellent cum laude" qualification.

  PhD project: Title: "The most luminous quasars: outflows, host galaxies and environment". Context: galaxy formation and evolution, with focus on the role of Active Galactic Nuclei in shaping the evolution of massive galaxies and of the high-redshift progenitors of galaxy clusters.

  PhD supervisors: Prof. F. Fiore (INAF Osservatorio Astronomico di Trieste, OATS), Prof. R. Maiolino (KICC and Cavendish Laboratory, University of Cambridge), Dr. E. Piconcelli (INAF OAR) and Prof. R. Schneider (Università di Roma La Sapienza).

Publication highlights

- **30 publications** (**H-index = 15**) on peer reviewed journals, of which **5 publications as first author** and **6 publications as second/third author**. One publication has been submitted and is undergoing review by Nature.
- **851 citations**, of which 217 citations as first author (source ADS).
- 4 non-reviewed publications as first author and 17 as co-author.

The complete publication list is reported in section Bibliography.

Telescope time allocation

- **PI-ship of 5 successful proposals**:
  - Atacama Large Millimetre and submillimetre Array (**ALMA**), *Building the spatially resolved CO SLED of the most luminous QSO in the local Universe*, ID 2019.1.00590.S, **6 hours**.
  - Karl G. Jansky Very Large Array (**JVLA**), *Molecular gas content and star-formation efficiency in hyper-luminous QSOs*, ID 18A-028, **21.5 hours**.
  - Northern Extended Millimeter Array (**NOEMA**), *Building the CO SLED of the most luminous QSOs at Cosmic noon*, ID W21DG, **10 hours**.
  - Telescopio Nazionale Galileo (TNG), *An atlas of optical stellar mass distributions and morphologies in*

an unbiased sample of local AGN hosts, ID A44TAC_36, **12.5 hours**.
  - ESO Rapid Eye Mount telescope (REM), *Near-IR SED of the hyper-luminous z=3.5 quasar J1555+1003*, DDT proposal, **7 hours**.
- **CoI-ship of 32 successful proposals**
  - **21 proposals in the millimetre and radio wavelength range**, in the context of galaxy-evolution, targeting nearby AGN and high-redshift quasars and galaxies.These proposals include ALMA, NOEMA, JVLA, Low-Frequency Array (LOFAR), Atacama Compact Array (ACA), Atacama Pathfinder Experiment (APEX), Institut de Radioastronomie Millimetrique (IRAM) 30-meter telescopes ($\sim$ **400 hours**).
  - 11 multi-wavelength proposals in the context of galaxy-evolution, including Multi Unit Spectroscopic Explorer (MUSE) observations at ESO Very Large Telescope; LBT Utility Camera in the Infrared (LUCI) and LUCI + Advanced Rayleigh-Guided Ground Layer Adaptive-Optics System (ARGOS) observations at the Large Binocular Telescope; Device Optimized for the LOw RESolution (DOLORES) and Near Infrared Camera Spectrometer (NICS) observations at Telescopio Nazionale Galileo; Chandra; X-ray Multi-Mirror Mission (XMM-Newton).

Expertise in millimetre and radio astronomy

- I have specialist knowledge of state of the art (sub-)millimetre telescopes, including both interferometric (ALMA, NOEMA) data, and single-dish data (IRAM 30-meter) of both the radio continuum and spectral lines.
  - I am expert of millimetre interferometry and aperture synthesis techniques, (self-)calibration, UV plane and image plane analysis, high-resolution observations of local galaxies and deep field observations of high-redshift quasars and galaxies, including low and very high signal-to-noise observations, multi-frequency source modelling.
  - I have been awarded observing time with ALMA (project 2019.1.00590.S) and NOEMA (project W21DG).
  - I have personally carried out mm observations at the IRAM 30-meter telescope in 2017 and in 2018 (Pico Veleta, Spain) for a total of 70 hours.
  - I am expert of dynamical modelling techniques for spectral line observations of local and high-redshift sources, using specific galaxies such as 3D-BAROLO and Kinemetry.
- I have deep expertise in state of the art centimetre-wave telescopes such as interferometric JVLA data of both the radio continuum and spectral lines.
  - I am specialist of interferometry and aperture synthesis techniques, (self-)calibration, UV plane and image plane analysis in the cm-wave domain, multi-frequency source modelling. I am expert of high-resolution observations of galaxies in the nearby Universe and of deep fields around high-redshift quasars and galaxies.
  - I have been awarded observing time with JVLA (project 18A-028).
- I have deep expertise in the analysis of data from Square Kilometre Array (SKA) precursors such as LOFAR.
  - I am specialist of preprocessing techniques of wide-field, radio images, such as the Preprocessing for Facet Calibration for LOFAR (preFactor), either applied to low-frequency (200 MHz) and to very low frequency (50 MHz) observational data.
  - I am expert of direction-dependent calibration and imaging techniques, including the Facet Calibration for LOFAR (Factor) tool and the Direction-Dependent spectral deconvolution framework based on image plane Faceting (DDFacet), either applied to low-frequency (200 MHz) and to very low frequency (50 MHz) observational data.
  - I am co-P.I. and responsible for the data analysis and scientific exploitation of two LOFAR projects in the framework of LOFAR Key Science Projects and LOFAR Two-metre Sky Survey (LoTSS) (P.I. C. Feruglio, E. Piconcelli).

Expertise in multi-wavelength study of galaxy evolution

- I am expert in the analysis of multi-wavelength spectroscopic and imaging data of local AGN and of high-redshift quasars and galaxies, especially in the near-infrared and optical bands. This includes long-slit spectra and datacubes from Integral Field Unit spectrographs, data acquired in seeing-limited or in Adaptive Optics AO-assisted mode, such as LBT/LUCI, LBT/ARGOS, VLT/X-shooter, VLT/MUSE, VLT/SINFONI, TNG/DOLORES, TNG/NICS).
- I am expert in the reduction techniques of spectroscopic and imaging data in the optical and near-infrared, using different specific softwares and packages such as the ESO Recipe Execution Tool (EsoRex), Astrocook, CubEx, and dedicated IDL, IRAF and MIDAS routines.
- I am specialist in the analysis of spectroscopic and imaging, optical and near-infrared data and I have developed a set of coding skills necessary to perform this task. I have developed custom procedures to fit multi-wavelength quasar and galaxy spectra taking into account the continuum, line emission and absorption features. I have created automatic procedures to detect faint sources in all kind of datacubes. I am specialist in the analysis of gas kinematics and dynamical modelling in optical and near-infrared datacubes, using specific softwares such 3D-BAROLO and Kinemetry, and custom procedures to perform a pixel by pixel spectral decomposition of different kinematic components.
- I am first-author and second/third author of several publications exploiting multi-wavelength data, identifying feedback from AGN and quasars and quantifying its impact on the host-galaxy evolution: Bischetti et al. 2017, A&A, 598, A122; Saturni, Bischetti et al. 2018, A&A, 617, A118; Vietri, Piconcelli, Bischetti et al. 2018, A&A, 617, A81; Feruglio, Bischetti et al. 2020; Zanchettin, Feruglio, Bischetti et al. 2021 (details in Bibliography).

Leadership and collaboration in international projects

I am either leader or collaborator in the international projects and collaborations outlined below. Within these projects, I coordinate teams of colleagues through the definition of work schedules, organisation of regular meetings to identify work strategies, best practises, and to validate achievements. During the past years, I designed new and innovative research projects aimed at enhancing the scientific impact and at maximising the data exploitation within these collaborations.

- **XQR-30 international collaboration**, exploiting ESO Large Program "The Ultimate X-shooter legacy survey of Quasars at the Reionization epoch" (XQR-30, P.I. V. D'Odorico, INAF OATs, http://xqr30.inaf.it). The collaboration includes 43 scientists from 13 institutes in 7 different countries.
  - I lead projects *Characterisation of broad absorption line (BAL) quasars at Cosmic dawn* and *Nuclear properties and emission line outflows in the first quasar population*, within Work Package 3 **Quasars in the early Universe and their environment**. I am first author of the publication *Widespread and strong outflows in XQR-30 quasars at the Reionisation epoch*, submitted to Nature and undergoing review, and of publication *The fraction and kinematics of broad absorption line quasars across Cosmic time*, submitted to ApJ.
  - I lead the Work Package 3 task "Spectral analysis of absorption, emission lines and continuum" from the quasar, the host-galaxy and its environment.
  - I contribute to the data calibration and analysis of ALMA follow-up programs (2021.1.01018.S P.I. S. Bosman, 2019.1.00111.S, P.I. B. Venemans).
- **Project PRIN MIUR 2017** "Black hole Outflows and the Baryon Life Cycle of Galaxies" (**BLACKOUT**, P.I. F. Fiore, INAF OATs, https://blackholewinds.inaf.it/).
  - Work Package 1 **BH feedback at the epoch of the formation of the largest BHs**, Task 1.1. I am leading the data reduction and analysis of ALMA, NOEMA, JVLA and LOFAR data of quasars in the WISE-SDSS Selected Hyperluminous (WISSH) sample. I am first author of two publications: Bischetti et al. 2018,A&A,617,A82 and Bischetti et al. 2021,A&A,645,A33.
  - Work Package 3 **Local laboratories for ISM and BH wind/jet physics**, Task 2.2. I am leading the reduction, calibration and analysis of high-resolution ALMA data of gas and dust in statistical samples of local AGN and in the host-galaxies of nearby luminous quasars. I am P.I. of ALMA project 2019.1.00590.S. I am first author of publication Bischetti et al. 2019a, A&A,628,A118, second author in Feruglio et al. 2020,ApJ,890,29F and third author in Zanchettin et al. 2021,A&A,655,A25.

  - Work Package 3, Task 3.5. I contribute to the reduction, calibration and analysis of NOEMA millimetre observations for a statistical sample of X-ray selected nearby quasars from the XMM-Newton Large Program "Supermassive Black Holes Winds in the X-rays" (SUBWAYS, P.I. M. Brusa).
- **XMM Multy-year Heritage Program** "The X-ray rise of primeval titans: HYPerluminous quasars at the Epoch of ReionizatION" (**HYPERION**, P.I. L. Zappacosta INAF OAR, https://xmm-tools.cosmos.esa.int/external/xmm_publications/large_programmes/view_lp.php?ao=20&pid=088499&t=MYHP), involving 35 researchers from 15 different institutes worldwide. I am responsible for the follow-up observations of HYPERION quasars from the (sub-)millimetre with ALMA (project 2021.2.00151.S) and NOEMA (project W21ED) to radio wavelengths with JVLA.
- **ESO Large Program** "SINFONI Survey for Unveiling the Physixs and Effect of Radiative feedback" (**SUPER**, P.I. V. Mainieri, ESO Garching, http://www.super-survey.org/), involving 38 scientists from 20 different institutes worldwide. I have been extensively involved in the calibration and analysis of ALMA data (projects 2017.1.00893.S, 2016.1.00798.S). I am co-author of three publications: Cicone et al. 2021,A&A,645L,8C, Circosta et al. 2021,A&A,646,A96, and Lamperti et al. 2021,A&A,645,A90.
- **ERC Advanced Grant 695671 QUENCH** (P.I. R. Maiolino, KICC, https://www.robertomaiolino.net/projects/quench). I have been involved in the Work Package *Galactic Outflows - Ejective mode* and I have been responsible for the reduction, calibration and analysis of ALMA data of the host-galaxies of quasars in the primordial Universe. I am first author of publication Bischetti et al. 2019b,A&A,630,A59.
- **ERDF Project QSOFEED** (P.I. C. Ramos Almeida, IAC, http://research.iac.es/galeria/cra/the-team/. I am leader of the analysis and interpretation of high-resolution, multi-configuration ALMA data of nearby quasars (project 2018.1.00870.S) and I am second author of publication Ramos Almeida et al. 2021, arXiv:2111.13578, A&A in press.
- **Project PRIN-RIC INAF 2019 n.115** "A systematic Study of the Largest Reservoir of Baryons and Metals in the Universe: the Circum-Galactic Medium of Galaxies" (P.I. F. Nicastro), Objective B *Gaining insights on the building of massive CGMs at high redshifts*, Task B1. I am leading the characterisation of the cold molecular and neutral gas phases in the circum-galactic medium of high-redshift quasars and galaxies, by exploiting ALMA data.
- Vera C. Rubin Observatory **Large Synoptic Survey Telescope (LSST) Corporation, AGN Science Collaboration (SC), In-kind Contribution** "Directable software contribution for the AGN SC: Simulations of high-z AGNs and galaxies in the LSST survey" (**ITA-INA-2**, lead A. Bongiorno INAF OAR). I am responsible for creating mock AGN catalogues for the optimisation of the LSST survey and of the LSST sinergy with ESA Euclid mission.

Attendance to schools and training events

- I have attended high-level schools to specialise in single-dish and interferometric, (sub-)millimetre and radio data, and to exploit the newest telescopes such as the James Webb Space Telescope (JWST):
  - *ALMA Data Handling Workshop* (Italian ARC, Bologna), Feb 2016
  - *9th IRAM millimetre interferometry school* (IRAM, Grenoble), Oct 2016
  - *5th LOFAR school* (Netherlands Institute for Radio Astronomy, ASTRON, Dwingeloo), Sep 2018
  - *LOFAR DATA Working Group: Data Reduction Hands On* (INAF OATs, Trieste, chair: Annalisa Bonafede), Jan 2019
  - *The first italian LOFAR school 2019* (INAF-Istituto di Radio Astronomia IRA, Bologna), Jun 2019
  - *ALMA I-TRAIN with the European ARC Network* (11 remote training sessions), Dec 2020 - Feb 2022
  - *JWST Workshop* (European Space Astronomy Centre ESAC, Madrid), Oct 2017
- I have attended several dedicated training session in IRAM and Institut de Planétologie et d'Astrophysique (IPAG) Grenoble headquarters on the subject of aperture synthesis and millimetre interferometry led by Dr. Roberto Neri (IRAM) and Prof. Cecilia Ceccarelli (IPAG).

Teaching

- I am currently responsible for the training of PhD students from Università degli Studi di Trieste (UniTS) and Scuola Internazionale Superiore di Studi Avanzati (SISSA) who carry out their PhD thesis

with the AGN team at INAF OATs (R. Tripodi, M.V. Zanchettin), concerning the techniques of radio interferometry, aperture synthesis, the calibration and analysis of interferometric (sub-)millimetre data, and techniques of dynamical modelling.
- I have been responsible for the co-supervision and training of graduate student at UniTS (Zanchettin, master degree in 2020), regarding the introduction to techniques of radio interferometry and aperture synthesis. I have supervised the millimetre data analysis performed in her master thesis (Zanchettin, Feruglio, Bischetti et al. 2021,A&A,655,A25).
- In 2018 at KICC Cambridge University, I was involved in the training and co-supervision of graduate students who carried out their master thesis with the "Galaxy formation and galaxy-black hole coevolution" team, supervisor R. Maiolino. I was involved in the training of PhD student S. Brownson concerning he techniques of radio interferometry, aperture synthesis, the calibration and analysis of interferometric (sub-)millimetre data.
- In 2019 at INAF OAR, I was responsible for the training of PhD student A. Travascio (Università di Roma La Sapienza, XXXII Cycle), who carried out his PhD project with the AGN group (supervisors F.Fiore, E. Piconcelli), concerning the identification and characterisation of ionised outflows from optical and near-infrared spectra of luminous quasars (Travascio et al. 2020,A&A,635A,157T) and galaxies in high-redshift galaxy clusters (Travascio et al. 2020,MNRAS,498,2719T).
- In 2019 at INAF OAR, I was responsible for the training of visiting PhD student A. Rojas Lilayú (ESO Santiago, supervisors E. Sani, I. Gavignaud), concerning the identification and characterisation of ionised outflows from optical and near-infrared spectra of statistical samples of nearby AGN (Rojas et al. 2020, MNRAS,491,5867R).
- In 2018-2019 I gave frontal lectures on "AGN outflows and feedback", and "Interferometry techniques in radio astronomy" at Università di Roma La Sapienza, degree course in "Astrofisica delle Alte Energie", for a total of 8 hours.

Colloquia and presentations on invitation at international conferences

- Invited Colloquium at Instituto de Astrofisica de Canarias (IAC Tenerife, ES), *A multiwavelength look into the common evolution of luminous quasars and their host-galaxies*, May 2021.
- Invited Colloquium at University of Sao Paulo AIG/USP (Sao Paulo, BR), *Probing AGN-driven outflows, host-galaxy and environment properties in luminous quasars*, AGN Webinars, Nov 2021.
- Invited Review presentation at INAF OATs (Trieste, IT), *AGN-driven outflows, host-galaxy and environment properties in luminous quasars*, Postdoc/PhD Seminars, July 2021.
- Invited presentation at the European Astronomical Society Annual Meeting Leiden (NL), *Quasar feedback at the epoch of Reionization*, July 2021.
- Invited presentation at the Young Astronomers on Galactic Nuclei rendezvous (IAC Tenerife, ES), *Hyper-luminous QSOs as probes of the maximum impact of AGN feedback" at the "Young Astronomers on Galactic Nuclei*, Sep 2019.

Other presentations at international conferences

17 contributed presentations in international conferences:
- Dec 2020: contributed talk *Quasar-driven outflows at the epoch of Reionisation* at SAZERAC - Quasars During Reionisation Symposium (virtual).
- Sep 2020: contributed talk*Linking extreme star formation, cold gas properties and mergers around luminous quasars at z∼2-5* at Epoch of Galaxy Quenching meeting (KICC Cambridge, UK).
- Sep 2019: contributed talk *The gentle monster PDS456 as seen by ALMA: implications for AGN feedback* at the conference ALMABO19 - Views on the Interstellar Medium in galaxies in the ALMA era (Bologna, IT)
- Sep: contributed talk *Probing AGN-feedback and host-galaxy properties in the most luminous QSOs up to z 6 with ALMA* at the conference Extremely Big Eyes on the Early Universe (Roma, IT)
- June 2019: contributed talk *The highest resolution ALMA observation of the most luminous QSO in the local Universe* at the conference EWASS 2019 (Lyon, FR)
- June 2919: contributed talk *The gentle monster PDS456 seen by ALMA: the galaxy-scale molecular*

outflow and its implication for AGN feedback at the conference Supermassive Black Holes: Enviroment and Evolution (Corfù, GR)
- June 2019: contributed talk *Unveiling the widespread presence of [CII] outflows in the first QSOs population* at the conference EWASS 2019 (Lyon, FR)
- June 2019: contributed talk *The gentle monster PDS456 as seen by ALMA: implications for AGN feedback* at the conference EWASS 2019 (Lyon, FR)
- June 2019: contributed talk *Uncovering QSO-driven outflows and galaxy assembly at cosmic Dawn with ALMA* at the IAU symposium 352: Uncovering early galaxy evolution in the ALMA and JWST era (Viana do Castelo, PT).
- Oct 2018: contributed talk *[CII] outflows in z=6 QSOs are there: investigating AGN feedback and host-galaxy properties in luminous high-redshift QSOs* at the conference *"AGN 13"* (Milano, IT)
- Sep 2018: contributed talk *[CII] outflows in z=6 QSOs are there: AGN feedback and host-galaxy properties in luminous high-redshift QSOs* at the conference *"Birth, life and fate of massive galaxies and their central beating heart"* (Favignana, IT)
- Aug 2018: contributed talk *[CII] outflows in z=6 QSOs are there: investigating AGN feedback and host-galaxy properties in luminous high-z QSOs* at the conference *"Are AGN special?"* (Durham, UK)
- Dec 2017: *Meeting of the Royal Astronomical Society: The link between AGN and galaxy formation"* (London, UK)
- June 2017: contributed talk *The most powerful [OIII] outflows in WISE/SDSS selected hyper-luminous quasars* at the conference *EWASS 2017* (Prague, CZ)
- Sep 2016: contributed talk *The WISSH quasars project (I): probing the AGN-galaxy co-evolution in the most luminous quasars* at the conference *"AGN12"* (Napoli, IT)
- Sep 2016: contributed talk *Revealing the heaviest, highly-accreting SMBHs at the heart of hyper-luminous quasars* at the conference *"Super Eddington"* (Arbatax, IT)
- Jul 2016: contributed poster *Probing AGN-feedback at its extreme - The WISSH quasars project* at the conference *"Signals from the deep past"* (La Valletta, MT)

Software and coding expertise

- Specialist of software for the reduction, calibration and analysis of (sub-)millimetre data: Common Astronomy Software Applications package (CASA), Grenoble Image and Line Data Analysis System (GILDAS), Continuum and Line Analysis Single-dish Software (CLASS).
- Expert user of pipelines and software analysis tools for data from SKA precursors such as FACTOR, preFACTOR, DDfacet.
- Expert user of softwares for the reduction and analysis of astronomical imaging data and spectroscopic data from single-slit or IFU spectrographs: ESO/MUSE, ESO/SINFONI, ESO/X-Shooter reduction pipelines, Astrocook, CubEx, QFitsView, SAOImageDS9, HEASARC FV, SExtractor, IRAF, MIDAS, 3DBAROLO, Kinemetry.
- Experienced programmer in Python 2.7-3.9, including scientific, statics and astronomy packages (e.g. Numpy, Scipy, Matplotlib, Ipython, Pandas, Statsmodels, Astropy, Pyfits, CosmoPy) and Numba compiler. Experienced programmer in IDL, good handling of Fortran 90, C^{++}, Mathematica.
- I have developed suites of custom procedures to optimise the analysis of astronomical data: this includes procedures for fitting single-slit spectra of individual sources and large source catalogues; procedures for the pixel-by-pixel spectral decomposition of multi-wavelength datacubes; procedures for the blind scan of datacubes for source detection; procedures for stacking spectra, datacubes, and UV-plane data.
- I am expert user of macOS, Linux and Windows operating systems. I am experienced in remotisation tools and protocols (e.g. ssh, sshfs, vnc, X2go), to be used directly from command line or through a Graphic User Interface. I am familiar with using cluster systems to exploit computational resources on complex data analysis pipelines and large datasets.

Commissions of trust

- I am member of the Scientific Organising Committee (SOC) and co-chair of the two-day Symposium "Properties and impact of large-scale multiphase AGN outflows" at the European Astronomical Society

Annual Meeting, 27th June - 1st July 2022 Valencia, https://eas.unige.ch/EAS2022/session.jsp?id=S6.

- I was member of the Local Organising Committee (LOC) for the Symposium "The X-ray Universe 2017", 6-9 June 2017, Rome, https://www.cosmos.esa.int/web/xmm-newton/2017-symposium.
- I am referee for the peer-reviewed astronomical journals *Astronomy & Astrophysics* (A&A), *Monthly Notices of the Royal Astronomical Society* (MNRAS), *Publications of the Astronomical Society of Australia* (PASA).
- I have been expert reviewer in the TNG/REM proposal evaluation during AOT 42-AOT 45 cycles.
- I take part in the distributed peer review process for the proposal evaluation at ALMA and ESO telescopes.
- I have been responsible for the organisation of the "Cycle of Seminars of Postdocs and PhDs at INAF OATs" since April 2021 (http://www.oats.inaf.it/index.php/it/past_seminars.html).

Outreach

- "Ricercatori in Gioco" by INAF, SISSA, ICTP, and INFN at SHARPER Notte dei Ricercatori, Trieste 24 Sep 2021, https://www.sharper-night.it/sharper-trieste/#events.
- "Virtual Tour of The Universe" by INAF OATs at "Trieste Next", Trieste, 24-26 Sep 2021 https://www.triestenext.it/categorie/piazza-unita.
- "Women in Science - La scienza è per tutte", European Science Night 2019, INAF OAR
- "Notte Europea dei Ricercatori" at INAF OAR, Monte Porzio Catone, 28 Sep 2018, http://divaoar.oa-roma.inaf.it/notte-europea-dei-ricercatori-2018/.

Press and Media coverage

- "Il Piccolo", "Oltre il Giardino" column, *L'astrofisica Manuela si occupa all'INAF dei buchi neri attivi delle galassie*, 24/05/2021, interview by journalist M. B. Tolusso.
- "Beckwith" radio , "TALOS" broadcast https://rbe.it/trasmissioni/talos/, 29/10/2020, interview by journalist A. Lerda.
- Press releases on Media INAF, by M. Malaspina:
  - https://www.media.inaf.it/2020/10/23/mezzogiorno-di-quasar/
  - https://www.media.inaf.it/2019/10/17/venti-quasar-universo-primordiale/
  - https://www.media.inaf.it/2017/08/08/quasar-ultra-luminosi/
- Press release on KICC Cambrige University newcast https://www.kicc.cam.ac.uk/news/greedy-black-holes-in-the-early-universe-generate-galactic-storms
- Other press releases:
  - https://phys.org/news/2019-04-giant-molecular-outflow-quasar-pds.html
  - https://tachyonbeam.com/2019/10/18/osservati-potenti-deflussi-da-quasar-primordiali/
  - https://gaetaniumberto.wordpress.com/2019/04/04/pds-456-il-mostro-gentile/

Bibliography

First author and second/third author publications are highlighted in boldface.

- **Bischetti** et al. (2022), *Widespread and strong outflows in XQR-30 quasars at the Reionisation epoch*, submitted to Nature 23/09/2021, first referee report 22/11/2021, resubmission 20/12/2021, under consideration.
- **Bischetti** et al. (2021), *The WISSH quasars project IX. Cold gas content and environment of luminous QSOs at* $z \sim 2.4 - 4.7$, A&A, 645, A33.
- **Bischetti** et al. (2019b), *Widespread evidence of [CII] outflows in the early Universe*, A&A 630, A59.
- **Bischetti** et al. (2019a), *The gentle monster PDS 456. The kpc-scale molecular outflow and its implications for QSO feedback*, A&A 628, A118.
- **Bischetti** et al. (2018), *The assembly of a giant galaxy around a hyper-luminous QSO*, A&A 617, A82.
- **Bischetti et al. (2017)**, *Powerful ionised outflows in the most luminous quasars*, A&A 598, A122.

- Ramos Almeida, **Bischetti**, et al. (2022), *The diverse cold molecular gas contents, morphologies and kinematics of type-2 quasars as seen by ALMA*, arXiv.2111.13578, DOI https://doi.org/10.1051/0004-6361/202141906, A&A in press.
- Vietri et al. (2022), *The WISSH quasars project X. Discovery of a powerful and variable ultra-fast outflow in a z=3.6 quasar*. Submitted to A&A.
- Laurenti et al. (2022), *X-ray spectroscopic survey of highly accreting AGN*, A&A, 657A, 57L.
- , Feruglio, **Bischetti** et al. (2021), *The IBISCO survey: I. Multiphase discs and winds in the Seyfert galaxy Markarian 509*. A&A, 655, A25.
- Chen et al. (2021), *Measuring the Density Fields around Bright Quasars at z∼6 with XQR-30 Spectra*, arXiv:2110.13917, submitted to ApJ.
- Cicone et al. (2021) *The first image of a molecular halo out to r 200 kpc (SUPER VI)*, A&A, 645L, 8C.
- Saturni et al. (2021) *Catching dual AGN activity and kiloparsec-scale outflows in IRAS 20210+1121*, A&A, 645A, 154S.
- Lamperti et al. (2021), *SUPER V. ALMA continuum observations of z∼2 AGN and the elusive evidence of outflows influencing star-formation*. A&A, 645, A90.
- Bosman et al. (2021), *Hydrogen reionisation ends by z=5.3 : Lyman-α optical depth measured by the XQR-30 sample*, submitted to MNRAS.
- Circosta et al. (2021), *SUPER. IV. CO(J = 3-2) properties of active galactic nucleus hosts at cosmic noon revealed by ALMA*. A&A, 646, A96.
- Vietri et al. 2020, *SUPER III. Broad Line Region properties of AGN at z∼2*, A&A, 644A, 175V.
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