

# BRIEF CURRICULUM VITAE OF GIANFRANCO BRUNETTI

## • ACADEMIC QUALIFICATIONS

1995: **LAUREA** in Astronomia, Univ of Bologna, 110/110 cum laude (supervisor Prof. G.Setti)

1999: **PhD** in Astronomy, "*High energy photons from inverse Compton scattering in the lobes of powerful radio galaxies*", Univ of Bologna (supervisor Prof. G.Setti)

2013 - 17: **Abilitazione** scientifica Nazionale for Associate Professor in Astronomy and Astrophysics

2018 - present: **Abilitazione** scientifica Nazionale for Full Professor in Astronomy and Astrophysics

## • POSITIONS & PERIODS ABROAD

### - IN ITALY

2023 - present: **Direttore**, INAF-Istituto di Radioastronomia (Bologna, Medicina, Noto)

2016 - present: **Primo Ricercatore**, INAF-Istituto di Radioastronomia, Bologna

2001 - 16: **Ricercatore**, INAF-Istituto di Radioastronomia, Bologna

1999 - 01: Post-Doc Fellow, University of Bologna

### - ABROADS AS VISITING SCIENTIST/PROFESSOR

2015: Theoretical Physics IV, Ruhr University, Bochum (D)

2013: Goddard Space Flight Center, Washington (USA)

2010: Naval Research Laboratory, Washington (USA); - Smithsonian Center for Astrophysics, Boston (USA);

- University of Wisconsin, Madison (USA)

2008: National Radio Observatory, Charlottesville (USA); - Smithsonian Center for Astrophysics, Boston (USA)

2005: Max Planck Institute for Astrophysics, Garching (D)

2004: Max Planck Institute for Astronomy, Heidelberg (D)

## • TEACHING & SUPERVISION OF STUDENTS

1999 - present: 11 Post Doc, 12 PhD Students, 17 Master Students in Astronomy or Physics

2000 - present: (several) teaching modules at the University of Bologna, lecturer at PhD schools (Italy and abroad)

## • MAIN FIELDS OF RESEARCH

Dr. Brunetti is internationally renowned primarily for his seminal studies on the acceleration and transport of relativistic particles and non-thermal emission in galaxy clusters and for his studies of radio galaxies in radio and X-rays. His main research fields are:

- ✓ Extragalactic Radio astronomy (galaxy clusters, radio galaxies, quasars)
- ✓ High-energy astrophysics (AGN, acceleration and transport of relativistic particles, high-energy emission)
- ✓ Computational astrophysics (cosmological simulations, MHD, HD)
- ✓ Plasma Astrophysics (magnetic fields, turbulence, shocks, plasma instabilities, kinetic processes)

## • INTERNATIONAL AWARDS

### 2022 INTERNATIONAL TARTUFARI PRIZE (Accademia Nazionale dei Lincei)

*For his "...broad spectrum of research covering extra-galactic radio astronomy studies, high-energy astrophysics, as well as acceleration, emission and diffusion processes of cosmic particles.. and his pioneering studies of the non-thermal properties of galaxy clusters which have received wide international recognition."*

### 2014 BESSEL RESEARCH AWARD (von Humboldt Foundation)

*For his "...outstanding research in the physics of radio galaxies and galaxy clusters and the investigation of the acceleration and propagation of high energy particles in these objects and their radiative processes."*

## • PUBLICATIONS

375 papers and conference proceedings, 280 refereed papers (including Nature, Science, Science Advances, Nature Astronomy) for a total of about **14000 citations (H-index 65)**. PI of 31 papers in peer reviewed journals, including Nature and PRL, for a total of 3000 citations (PI H-index 22). Contributions to **3 books**, PI and Co-I of **30+ feasibility studies, technical reports and roadmaps**.

## • INVITED TALKS

90+ Invited, Review, Plenary talks and Concluding Remarks at [international conferences](#)

30+ Invited colloquium at [Universities and Institutes abroad](#).

## • LARGE SCIENTIFIC COLLABORATIONS

### - COORDINATOR

2008 - present: **Member of the Management Council** of the [LOFAR Survey Key Science Project \(SKP\)](#), the largest LOFAR KP (the KP includes 400+ researchers from 55 Institutes and 10 Countries)

2009 - present: **co-CHAIR** of the [Science Working Group GALAXY CLUSTERS](#) of the [LOFAR SKP](#) (70+ researchers)

### - MEMBER

2022 - present: **Member** of the Spoke 3, National Centre for HPC, BIG DATA and Quantum Computing (CN), PNRR

2022 - present: **Member** of the Work Package n.1 (WP1) HPC Codes Enabling and Optimization del (CN)-PNRR

2022 - present: **Member** of the EMU (ASKAP) KP Clusters & Cosmic Web

2021 - present: **Member** of the MERGHERS (MeerKAT) Project

2019 - present: **Member** of the Collaboration & Technical WG WEAVE-LOFAR

2015 - present: **Member** of the SKA Science Working Group Cosmic Magnetism

2015 - present: **Member** of the ATHENA Working Group Astrophysics of groups and clusters of galaxies

2015 - 21: **Member** of the EMU (ASKAP) KP Galaxy Clusters

2015 - 21: **Member** of the EMU (ASKAP) KP Cosmic Web

2014 - present: **Member** of the CHERENKOV TELESCOPE ARRAY (CTA) Collaboration

2011 - present: **Member** of the ASKAP Evolutionary Map of the Universe (EMU) Key Science Project

## • COORDINATOR OF GRANTED RESEARCH PROGRAMS (limited to 2005+)

Dr. Brunetti has won numerous research grants obtained through a competitive procedure and has managed research groups funded for a total of 1+ MEuro.

2019 - present: **National Coordinator**: Galaxy clusters science with LOFAR (PRIN INAF Mainstream)

2018 - 19: **Coordinator of R.U.**: Shedding light on mini radio halos with a NuSTAR observation of the Ophiuchus cluster (ASI)

2017 - 21: **Coordinator di R.U.**: HORIZON2020 – EuroEXA (H2020)

2015 - 18: **Primary Coordinator**: Cosmological Simulations of Radio Bright Plasmas, funded by EC (MSC GF, H2020)

2015 - 18: **National Coordinator**: Transformational Science with non-thermal phenomena in clusters (PRIN INAF)

2012 - 14: **Primary Coordinator**: Giant Radio Halos, funded by EC (MC IEF, FP7)

2010 - 12: **Coordinator of R.U.**: Towards an Italian network of computational cosmology (PRIN INAF)

2008 - 10: **National Coordinator**: Non-thermal components in galaxy clusters (PRIN INAF)

2007 - 10: **National Coordinator**: Acceleration of relativistic particles in galaxy clusters & non-thermal emission I,II,III (ASI)

2006 - 07: **National Coordinator** of Observations of the Universe from the Moon (Italian Vision for Moon Exploration)

## • MANAGEMENT & BOARDS (limited to the most relevant and recent commitments)

### - EUROPEAN RESEARCH INFRASTRUCTURES (ERIC)

2021 - present: **vice-CHAIR** of the [Interim LOFAR ERIC Council](#)

2021 - present: **Ministerial (MIUR) Scientific Delegate** at the [Interim LOFAR ERIC Council](#)

2020 - 21: **Member (Italian Representative)** of the [Ministerial ERIC Working Group](#) to establish a LOFAR ERIC

### - INTERNATIONAL LOFAR TELESCOPE (ILT):

2022 - present: **Member (Italian Representative)** of the [DANTE Steering Committee](#)

2018 - present: **Member (Italian Representative)** of the [BOARD of the International LOFAR Telescope](#)

2018 - present: **CHAIR** of the [BOARD of the Italian LOFAR Consortium](#) (INAF + Uni Torino)

### - SQUARE KILOMETRE ARRAY (SKA)

2022 - present: **Member** of the SKAO's [Science and Engineering Advisory Committee \(SEAC\)](#)

2018 - present: **Member** of the [Italian Advisory Board](#) of the SKA

2017 - 18: **Member** of the SKA Italy Coordination Committee (SKAICC)

### - OTHER BOARDS

2022 - present: **Member** of the Board of the [Unità Scientifica Centrale USC VIII](#) Computing in INAF

2021 : **CHAIR** of the International Committee "INAF Future engagements in Computational Astrophysics"

2019 - 23: **Member** of the [Comitato Scientifico Nazionale \(CSN\) 1](#): Galaxies and Cosmology

2019 - 23: **Member** of the [Consiglio di Struttura](#) of the INAF-Institute of Radioastronomy, Bologna

2018 - present: **Member** of the Advisory Committee of the [Division for Radio Astronomy UTG II](#) in INAF

- **ACTIVITY AS REFEREE**

- MEMBER and CHAIR of Selection Committees

- Ricercatori INAF (2010,2019,2022), Post Doc and PhD positions (many times)

- REFEREE for

- Nature, Physics Review Letters, Physics Review D, ApJ, ApJ Letters, MNRAS, MNRAS Letters, JCAP, A&A, A&A Letters, Astroparticle Physics, New Astronomy, New Astronomy Reviews, Space Science Reviews, Galaxies;

- REFEREE for observational and HPC proposals

- GMRT, uGMRT, LOFAR, VLA, IS CRA, PRACE, CINECA

- REFEREE for funding agencies

- Referee for the DFG (German Research Foundation)

- Referee for NWO (Dutch Research Council)

- Referee for South African NRF (National Research Foundation)

- Referee for the National Science Center, Poland

- Referee for the ERC Starting, Consolidator and Advanced Grants

- **SCIENTIFIC ORGANIZATION OF CONFERENCES**

- 2002 - present: **CHAIR** and **Member** of the SOC in **27** conferences

- **SCIENTIFIC EDITOR**

- 2008 - 20: **Member** of the Board of Editors of New Astronomy (Springer)

- 2011: **Editor** of Non-thermal phenomena in colliding galaxy clusters, MmSAI, 82

- 2006: **Editor** of The Origin and Evolution of Cosmic Magnetism, Astronomical Notes, 327

- 2003: **Editor in Chief** of The Physics of Relativistic Jets in the Chandra and XMM Era, New Astronomy Review, 47