

Section A: Overview of the Research Project

TITLE: Neutral Hydrogen Evolution in Galaxies from $z=1$ to Today: A MeerKAT-GMRT Study

AREA OF RESEARCH: Science

ACADEMIC LEVEL: Doctoral

ABSTRACT:

Understanding how galaxies acquire, retain, and deplete their neutral atomic hydrogen (HI) is central to tracing their evolution over cosmic time. Yet direct detections of HI emission rapidly decline beyond $z \gtrsim 0.2$, requiring statistical techniques such as spectral stacking to probe typical galaxy populations at higher redshift. This project will combine MeerKAT MIGHTEE-HI L-band data with uGMRT Band-4 superMIGHTEE observations over the COSMOS and XMM-LSS fields to measure the evolution of the HI mass budget, HI scaling relations, and the HI mass function across $0 < z < 1.4$. By stacking uniformly selected spectroscopic galaxy samples and implementing an extended pipeline that robustly characterises selection functions and biases, we will provide the first consistent measurement of how HI reservoirs evolve from the post-Cosmic Noon epoch to the present day. The results will reveal how HI content depends on stellar mass, star-formation activity, and environment within the cosmic web, and will establish a benchmark for future SKA-Mid spectral stacking studies.

PRIMARY SUPERVISOR: Lucia Marchetti, lucia.marchetti@uct.ac.za, University of Cape Town

CO-SUPERVISORS:

Isabella Prandoni, isabella.prandoni@inaf.it, INAF – Institute of Radio Astronomy (IRA), Bologna, Italy

Mattia Vaccari, mattia.vaccari@uct.ac.za, University of Cape Town

COLLABORATORS:

Alessandro Bianchetti, INAF – Institute of Radio Astronomy (IRA), Bologna, Italy

Francesco Sinigaglia, Institute for Fundamental Physics of the Universe (IFPU), Trieste, Italy

Russ Taylor, University of Cape Town

Section B: Details of Research Project

SCIENTIFIC MERIT:

Neutral atomic hydrogen (HI) plays a crucial role in galaxy evolution: it fuels molecular gas formation, sustains star formation, and mediates the baryon cycle between galaxies and their surrounding circumgalactic medium (CGM). Although the cosmic HI density evolves only mildly with redshift, its **distribution within galaxies**, and how it scales with stellar mass and star formation rate, reveals the physics of accretion, quenching, and feedback. Recent work (e.g. Chowdury+ 2021, 2022, 2023, 2024, Sinigaglia+ 2022, 2024, 2025, Bianchetti+ 2025ab) shows that:

- HI is faint and difficult to detect beyond $z \gtrsim 0.2$, requiring **stacking** to extract ensemble-average HI properties.

- The **$M_{\text{HI}}-M_*$** scaling relation evolves in normalisation but not slope from $z=0$ to $z \approx 1$, suggesting stellar mass-independent HI accretion/depletion mechanisms.
- Quiescent galaxies retain surprisingly large HI reservoirs linked to dust survival, morphology, and environment.
- Stacking-based HIMFs show measurable evolution between $z=0$ and $z \approx 1$.

However, these results were obtained via single-field single-band radio surveys observed with different instruments, analysed with different interferometric data processing techniques and stacking frameworks. They also relied on inhomogeneous optical spectroscopic samples and selection criteria whose (in)completeness is not well-characterised and which could affect the stacking results. In particular, the **combined power** of MeerKAT and uGMRT has not yet been fully exploited in a unified analysis. This project aims to fill this gap by using MIGHTEE-HI and superMIGHTEE-HI spectral cubes to stack galaxy sub-populations selected in comparable ways over the same COSMOS and XMM-LSS fields and **reconstruct the redshift evolution of the HI mass budget, HI scaling relations, and HI mass function (HIMF) across $0 < z < 1.4$, and study their dependence as a function of environment within the cosmic web (e.g. in clusters and groups, filaments and nodes).**

In order to do that, we will use MIGHTEE-HI (L-Band) and superMIGHTEE (Band4) Spectral Cubes in the COSMOS and XMM-LSS fields to probe the average HI properties of galaxies selected via optical spectroscopy. We will combine these with existing spectroscopic samples available within the COSMOS and MIGHTEE collaborations, incorporating early results from surveys soon to start with 4MOST, MOONS, PFS and with Euclid Public Data Releases. MIGHTEE-HI Early Science results (Bianchetti+ 2025) and early results from superMIGHTEE-HI Band4 data processing (Bianchetti+ priv comm) demonstrate the feasibility of HI stacking studies in different redshift and mass bins up to $z \approx 1$, and we will improve upon them by implementing a robust framework to characterise the selection function of our stacking samples. We will also make use of an extended stacking pipeline, currently under development and building on previous work by our collaborators, which will allow us to test for multiple biases and selection effects.

While not part of the core PhD project, the opportunity to push spectral stacking studies at $z \sim 2$ using the superMIGHTEE Ultra Deep Band3 survey in COSMOS and over wider areas using the EDFS-MeerKAT Medium Deep L-Band survey and Euclid Deep Spectroscopy will also be considered as the project develops.

This project will provide the first consistent look at how atomic gas properties evolve during the transition from the "Cosmic Noon" to the present day. By utilising the combined sensitivity of MeerKAT and the uGMRT in the most well-studied extragalactic fields, the student will produce a benchmark for SKA-Mid science.

FEASIBILITY:

This project will be carried out in collaboration with Isabella Prandoni and Alessandro Bianchetti at INAF/IRA, who are leading the superMIGHTEE-HI data processing with the assistance of Russ Taylor. The spectral cube stacking pipeline will be developed in collaboration with Alessandro Bianchetti and Francesco Sinigaglia. Optical samples, their properties and their selection function will be defined in collaboration with Lucia Marchetti and Mattia Vaccari. The datasets, the

stacking software and the optical samples will be publicly released in order to allow a direct comparison with other work and contribute to the planning of SKA-Mid spectral stacking studies.

The student will have access to MIGHTEE and superMIGHTEE data and expertise as part of the respective consortia. Moreover, the student will have access to IDIA's ilifu cloud computing facility, where we expect that most of the analysis will be carried out. The student will be based at UCT and will thus have access to the direct technical and scientific support provided by the supervisors and IDIA researchers; the student will also be able to visit INAF/IRA through the support of the ISMOS programme between SA and Italy.

SKILLS DEVELOPMENT: The student will learn/consolidate his/her knowledge in multi-wavelength astronomy and radio data analysis. The project focuses on survey science, and thus the student will also improve and build skills in statistical analysis of large datasets, while also learning to use a variety of astronomical and programming tools needed to carry out the project.

EXPECTED MILESTONES:

Year 1:

- Literature review & technical training
- Processing of MIGHTEE and superMIGHTEE data and validation spectral cubes
- Implementation of Extended Stacking Pipeline
- Reproduce Bianchetti (2025) $z \approx 0.36$ MIGHTEE-HI Early Science results for validation

Year 2:

- Apply pipeline to MIGHTEE-HI and superMIGHTEE-HI spectral cubes
- Derive $M_{\text{HI}}-M_{\text{*}}$ at $z \approx 1$ and study redshift-evolution of scaling relations
- Reconstruct HIMFs and $\Omega_{\text{HI}}(z)$ across entire 0–1.4 range

Year 3:

- Physical interpretation through comparison with simulations
- Thesis writing and public data release

RELEVANCE TO SARA0 RESEARCH PRIORITY AREAS: This project falls under the highest priority area for science (exploiting MeerKAT).

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Italian Citizen & South African Permanent Resident



Education & Professional Qualifications

Academic Qualifications

- 2006 **BSc in Astronomy**, University of Padova, Italy.
- 2008 **MSc in Astronomy**, University of Padova, Italy, 110/110 Cum Laude.
- 2012 **PhD in Astronomy**, University of Padova, Italy.

Professional Qualifications

- 2016 **Postgraduate Course in Science Communication - Science Communication: an introduction to theory, best practice and practical skills**, Centre for Research on Evaluation, Science and Technology (CREST), University of Stellenbosch, South Africa, NQF level 8, Credits 15.
- 2022-2027 **NRF Rated Researcher**.

Research & Academic Experience

- Extensive knowledge of multi-wavelength astronomy observing principles and of the scientific applications and exploitations of multi-wavelength observations.
- Extensive knowledge of studies of the statistical probes for Observational Cosmology Studies such as luminosity/mass functions, star formation rate estimators and strong lensing search and multi-wavelength characterisation.
- Extensive experience as PI or co-PI of observing proposals with a number of international observing facilities
- Extensive experience in image processing and source extraction techniques.
- Extensive experience with 2D and 3D visualisation software (VR and digital planetaria) for astronomical and multi-disciplinary research.
- Extensive experience in creating and managing large astronomical databases, including the production and public release of multi-wavelength source catalogues and related documentation
- Extensive experience interfacing with Community Support Groups, Mission Planning and Data Processing Teams.
- Experience designing and working with both ESA-led space missions (Herschel, Euclid) and international space missions (Hubble, Spitzer, Akari).
- Extensive experience supervising PhD students, Masters, Honours and Bachelor students (6 Honours, 1 Bachelors, 4 MSc, 3 PhD students (co)supervised in the period 2017-2023).
- Extensive experience in undergraduate teaching, tutoring and mentoring.
- Extensive experience in giving contributed and invited talks at scientific conferences/meetings and technical workshops.
- Extensive experience liaising with academic and University management boards at the highest levels.

Project Management & Engagement Experience

- Extensive project management experience within both academic research projects, international scientific collaboration and University/public facilities (e.g. laboratory and Planetaria)
- Extensive experience in managing big collaborations and working as part of a team either as a team member or as (an elected) board/exec member, working group chair of international consortia/professional bodies
- Broad experience in writing funding requests to National and European funding agencies (e.g., the *European Commission*, the *Science and Technology Facilities Council* - STFC in the UK, the DSI/NRF in SA and the Italian Ministry of Foreign Affairs and International Cooperation).
- Project management experience within both academic projects and National (SA, UK, IT) or International science communication & education projects.
- Experience in administrative and financial management of national/international projects.
- Experience in creating and maintaining a website as well as in creating contents for media releases.
- Experience liaising with policymakers and stakeholders at the National (SA and UK) and International level.
- Knowledge of impact evaluation strategies for both National (SA, UK and Italy) and International projects.
- Extensive experience in planning, organising and hosting international workshops and conferences.

Employment History

Academic & Research appointments

- Nov 2012 – **STFC Post-Doctoral Research Associate in Astronomy**, the Open University, Milton Keynes, UK.
- March 2017 – • Develop statistical studies of galaxy formation and evolution processes combining multi-wavelength observations
• Leadership within the Herschel/ATLAS and Herschel/HerMES Consortia in the identification, follow-up observations and physical classification of strong gravitational lensing candidates exploiting all the Herschel Extragalactic Surveys ($\sim 1000 \text{ deg}^2$) and multi-wavelength observing programs.
- April 2017 – **SARChI Post-Doctoral Research Fellow in Astronomy**, the University of Cape Town & the University of the Western Cape (joint position), Cape Town, SA.
Feb 2020 – • Galaxy formation and evolution research from a multi-wavelength perspective • Teaching Assistant and Course Coordinator for the course *Introduction to Galaxies and Cosmology* (PHY327) • PI of the multi-cycle (cycle-25, cycle-26) HST snapshot proposal: "SNAPshot observations of the largest sample of lensed candidates in the Equatorial and Southern Sky identified with Herschel". • PI of 2 observing programs with the South African Large Telescope (SALT) • Student supervision
- March 2020 – **Senior Lecturer in Astronomy**, University of Cape Town, SA.
present – • Lecturer of the second year undergraduate course *Astrophysics* (AST2002H) <http://www.ast.uct.ac.za/ast/undergraduate/ast2002h> • Galaxy formation and evolution research from a multi-wavelength perspective
• SA co-I in the EU funded project *SKilled, Innovative & Entrepreneurial Scientists*, SKIES (Call: EC-H2020-SwafS-2020-1; Grant Agreement: 101006212), devoted to create and deliver training for astronomy PhD students and early career researchers on innovation and entrepreneurship • Co-PI of the NRF ISARP 2023-2025 Italy-SA Bilateral program RADIOMAP+ aimed at foster the collaboration of the two countries in the SKA era • 4MOST Hemisphere Survey of the Nearby Universe (4HS) Survey exec member as Data Management Unit/Catalogue/Database Manager. • Students supervision at different academic levels. • Board member of the UCT Science Faculty Research Committee, a committee that oversee the faculty's research strategy, postgraduate and funding matters. • Exec member of the International Astronomical Union (IAU) Division J *Galaxies & Cosmology*, the international representative body for professional astronomers. • I am one of the 10 selected SA PI for the LSST international project.
- September 2023 – **IDIA Visualisation Lab Director**, University of Cape Town, Cape Town, SA.
present – • Managing the development of the VR software iDaVIE • Manage the operations and maintenance of the lab
• Menage a team of software developers • Develop the new strategy of the lab integrating multi-disciplinary aspects and collaborations • Manage the international collaborations of the lab • Supervise students working on data visualisation projects
- Vocational - Science Communication, Public engagement and Project Manager Roles**
- Jan 2014 – **Chair of the Education & Outreach UK National working group for the *International Year of Light***
March 2016 **2015 (IYL2015) UNESCO initiative.**
- Jan 2014 – **Project manager of the Open University participation as gold international sponsor in the *International***
Oct 2016 ***Year of Light 2015 (IYL2015) UNESCO initiative.***
- Jan 2017 – **Project Manager & Scientific Advisor of the "Hemelliggaam, or the Attempt to be here now" art**
2020 **project., <https://www.hemelliggaam.com>.**
- Jan 2019 – **Coordinator of the Soapbox Science Cape Town initiative, <http://soapboxscience.org>, An outreach**
present **project to promote women in science.**
- Jan 2019 – **Past president/advisor of the African Planetarium Association, <https://africanplanetarium.org/>.**
present

Student supervision

Since 2016 I have supervised **10 honours NASSP (National Astrophysics and Space Science Programme) students** all affiliated at the University of Cape Town, and co-supervised **3 honours students in computer science at UCT** in collaboration with Prof. James Gain. All students successfully completed their honours and continued with their Masters at the University of Cape Town and at the University of the Western Cape.

Since 2020 to date, when my position changed to academic, I supervised **1 international Bachelor, 2 international MSc, 3 national MSc, 1 international PhD and 2 national PhD students** that successfully completed their degrees. In 2026, I am currently supervising **3 national MSc and 1 national PhD** students.

More in details, in 2020 I have co-supervised a **Masters student (Mr Edoardo Borsato) and a Bachelor student (Miss Cecilia Giorgi) at the University of Padova** in collaboration with Prof. Enrico Maria Corsini (University of Padua, IT) and Dr Mattia Negrello (University of Cardiff, UK). Mr Borsato successfully obtained his Masters with distinction in October 2020 and Miss Giorgi successfully completed her Bachelor degree in Astronomy both at the University of Padua. Mr Borsato has then continued with a **PhD under my co-supervision** that he successfully completed in 2023. In 2020 I have also supervised **Miss Valentine Nyirahafashimana, a Master's student at the University of Rwanda**, East African Institute for Fundamental Research (ICTP- EAFIR). She obtained her degree in February 2021. In 2020 I

have also started to serve as co-supervisor for **Mr Alex Sivitilli**, a PhD student at the University of Cape Town who successfully graduated in 2023.

In 2021 I have started to supervise **Miss Malebo Ella Moloko**, a PhD student at the University of Cape Town, together with Prof. T. H. Jarrett. She is due to complete her PhD in early 2026. Between 2021 and 2023 I have supervised (together with Prof. Julien Larena and Dr Pierre Fleury), **MSc students Mr Daniel Johnson**, who has graduated with Distinction in 2023.

Between 2023 and 2024 I have co-supervised **Mr Boaz Keren Gil** in his MSc in Computer Science at the University of Cape Town. He has successfully obtained his Master in 2024 and he is now collaborating with the IDIA vislab as external consultant. In 2024 I have started to **supervise Miss Ansofi Pretorius (Astronomy NASSP MSc** with coursework and minor dissertation) and to **co-supervise Miss Kyra Kummer (Astronomy MSc** via dissertation only) together with Prof. D.J. Pisano at UCT, they are both submitting their thesis in February 2026.. From 2025 I am supervising **Miss Carys Gilbert** a SARAO funded MSc student and co-supervising **Mr Maurice Bossekota Gbaya**, an MSc student in Computer Science at UCT. In 2026 three new students are joining my group **Mr Christiaan Schutte** and **Miss Kenzo Sandenbergh**, MSc students and **Miss Jayde Bhana**, PhD student.

Publications, Talks and Grants

Publications

2010 - present Published **184 publications of which 125 are papers on refereed journals** (the rest are proceedings and other publications/products). The number of citations generated by refereed papers is 7097, leading to an Hirsch impact factor with an **h index of 44**. A complete list of my publications is attached, but it is also available online through the SAO/NASA Astrophysics Data System (<https://bit.ly/30vTgKa>) or Scopus.

Talks

2009 - present >30 Astronomical public conferences/discourses/posters and workshop with general public, students, teachers and amateur astronomers. An **average of 2 public talks a year**.

2009 - present >40 scientific talks at international conferences/workshops. An **average of 3 contributed talks a year** at international conferences/workshops.

2012 - present **13 invited contributions at international conferences, workshops or events**.

Grants

- 2014 - 2015 Open University internal grant to manage the Open University IYL2015 initiatives (10 kGBP).
- 2015 Royal Astronomical Society & SEPnet grants to co-produce an animation for the International Year of Light 2015 (3.0 kGBP).
- 2015 SEPnet grant sponsorship to participate to "Soapbox Science 2015 - Bringing science to the public" (soapboxscience.org).
- 2015 Merit Award from the Faculty of Science and the Open University in recognition of the work done for the International Year of Light 2015 (1.5 kGBP).
- 2016 South African DST-NRF visiting fellowship for young researchers from the UK (220 kZAR).
- 2017-2020 3-years long SA National Research Foundation grant to develop/manage the *Hemelligaam* project as part of the NRF History of Astronomy Roadmap (1 MZAR), <https://www.hemelligaam.com>.
- 2019 SA National Research Foundation and Department of Innovation grant to coordinate the Soapbox Science project in Cape Town (60 kZAR), <http://soapboxscience.org>
- 2020-2021 SA National Research Foundation and Department of Innovation grant to coordinate the Soapbox Science project in Cape Town (40 kZAR), <http://soapboxscience.org>
- 2021-2022 EU Horizon Grant - EC-H2020-SwafS-2020-1 - in support of the 2 years SKIES project (20 kEUR were given to UCT, of the 300 kEUR granted to the entire consortium made of 7 partner Institutions)
- 2021 UCT Enabling Grant Seeker Excellence Awards to support the SKIES project (20 kZAR)
- 2022 UCT Seed Research Grant in support of Rated Researcher (20 kZAR)
- 2022 NRF grant in support of Rated Researcher (50 kZAR)
- 2023-2025 NRF Research Grant in support of rated researchers (720kZAR over three years)
- 2023-2025 NRF ISARP 2023-2025 Italy-SA Bilateral program RADIOMAP+ (co-PI; 1.5 MZAR over 3 years)
- 2024 Gerald Merton Fund to cover my membership in the Royal Astronomical Society in 2024 (155 GBP (~ 3.5 kZAR)).
- 2025 UCT Research Leadership Program (offered coaching, mentoring and 45K ZAR).
- 2026 EU Horizon Grant - HORIZON-MSCA-2025-SE-01 - for the project MEROPE (45 kEUR).

PERSONAL INFORMATION

Isabella Prandoni



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Sex Female | Date of birth 29/12/1964 | Nationality Italian

Enterprise	University	EPR
☐ Management Level	☐ Full professor	☒ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
☐ Mid-Management Level	☐ Associate Professor	☐ Level III Researcher and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

EMPLOYMENT / TRAINING

2024 - current	Research Director INAF – Istituto di Radioastronomia (Bologna, Italy)
2017 – 2023	First Researcher INAF – Istituto di Radioastronomia (Bologna, Italy)
2001 - 2017	Level III Researcher INAF – Istituto di Radioastronomia (Bologna, Italy)
1999 - 2001	Postdoc Fellowship University of Bologna (Bologna, Italy)
1998 - 1999	CNR Fellowship CNR – Istituto di Radioastronomia (Bologna, Italy)
1997 – 1998	Research Associate ESO – European Southern Observatory (Garching, Germany)
1997 – 1997	CNR Fellowship CNR – Istituto di Radioastronomia (Bologna, Italy)
1993 – 1996	Ph.D. Fellowship University of Bologna (Bologna, Italy)

QUALIFICATIONS / DEGREES

1997	Ph.D. in Astronomy University of Bologna (Bologna, Italy)
1992	Laurea Degree (M.Sc. equivalent) in Physics University of Milan (Milan, Italy)

PERSONAL SKILLS

Mother tongue(s)	Italian
Other language(s)	English (fluent); French (good); German (poor)
Job-related skills	Management and coordination of large national and international technological projects (like e.g. SRT, SKA); Plships and leading roles in major scientific projects (international legacy radio surveys); Plships and coordination roles in calls for competitive funding (~1.3 MEu as PI/leader in last 5 years); advisory roles in international and national panels/boards and for research institutions (INAF, ASTRON, ESO); referee roles for MIUR, funding agencies (NWO-NL, ANR-France, ISF-Israel, DF-Germany) and peer-reviewed international journals; supervision and co-supervision of M.Sc and Ph.D students (21) and junior postdocs (8); internationally recognized expertise in radio interferometry techniques, radio surveys and related extragalactic science (20 invited seminars/talks/reviews in the last 5 years); organization of national and international conferences (16 in the last 5 years); high publication record (~100 papers in peer-reviewed journals in the last 5 years); editor of 4 books.

Digital skills	Astronomical data analysis software (Miriad, AIPS, CASA, CLASS, IRAF); development and test of astronomical data analysis tools and pipelines; simulated radio data.
Other skills	Observational astronomy; radio telescopes; radio-continuum surveys; radio interferometry techniques; galaxy evolution; Active Galactic Nuclei

ADDITIONAL INFORMATION

Publication list	NASAADS
Most relevant national and international appointments	2025-today: Member (Advisor) of the Italian Delegation to the SKAO Council 2025-today: SKA spoke-person for the INAF Scientific Directorate 2020-today: INAF designated member of the <i>European SKA Forum</i> 2017-today: Chair of the <i>Italian SKA Board</i> 2017-today: Co-Chair of the Focus Group AGN, part of the SKA <i>Extra-galactic Continuum Science WG</i> 2016-today: Core member of the SKA <i>Extra-galactic Continuum Science WG</i> 2020-2024: Coordinator of the INAF UTG-II <i>WG SKA Science</i> 2019-2024: Member of the INAF UTG-II <i>WG SKA-MID Precursors and Pathfinders</i> 2019-2021: INAF referent for SKA bridging phase and SKA Consultant Lead Forum 2019: Coordination of the writing of the document <i>Italian SKA Roadmap</i> 2017-2024: SKA Advisor for INAF UTG-II 2014-2015: Member of the SKA <i>Science Review Panel</i>, responsible for selecting science priorities for SKA1 2013-2018: Member of the <i>European ALMA Science Advisory Committee (ESAC)</i> 2013-2015: Co-Chair of the SKA <i>Continuum Science Working Group</i> 2012-2015: Member of the LOFAR <i>Time Assignment Committee</i> 2012-2015: Chair of the <i>WSRT Programme Committee</i> 2012-2014: Coordination of the writing of the <i>Italian SKA White Book</i> 2008-2011: Member of INAF <i>Scientific Council</i> 2006-2016: Project Scientist of the INAF <i>Sardinia Radio Telescope</i> project
Research Grants and Awards (PIships/coordination roles only)	*PI of the project <i>MeerKAT and Euclid Team Up: Exploring the galaxy-halo connection at cosmic noon</i>: INAF GO Large Grant 2024, 100 kEu *Advisory Board member and vice-PI of the project: <i>Strengthening the Italian Leadership in ELT and SKA (STILES)</i>, PNRR Infrastrutture di Ricerca, 70 MEu (including 1.1 MEu as Activity leader) *National Scientific Coordinator of the project <i>LOFAR and MeerKAT Team Up: A Unique Radio Window on Galaxy/AGN co-Evolution</i>, INAF Large Grant 2022: 178 keuro *National Scientific Coordinator of the project <i>SimulATING the RadiO Sky (SAuROS)</i>: INAF MAIN STREAM 2018, 31.5 kEu *National Scientific Coordinator of the project <i>FORmation and Evolution of Cosmic STRuctures (FORECaST) with Future Radio Surveys</i>: PRIN INAF SKA/CTA 2016, 320 kEu *PI of the National Significant Bilateral Project Italia - South Africa <i>Mapping the Universe on the pathway to SKA. From black holes to large cosmic structures: a multi-scale approach to next-generation radio surveys</i>, funded by the MAECI, 2015-2017, 80 kEu *National Scientific Coordinator of the project <i>The e-MERLIN Galaxy Evolution (e-MERGE) Survey</i>: PRIN INAF 2009, 113 kEu
SKA precursors (legacy) surveys/key projects	*PI of the project <i>MeerKAT and Euclid Team up: Exploring the galaxy-halo connection at cosmic noon</i>. Pilot survey (118h) approved at MeerKAT in 2023. *Leader of the ASKAP EMU Key Science Project <i>RQ-AGNs: physical and evolutionary Properties</i> *Member of Management Team and WG Leader of the Legacy Project <i>The e-MERLIN Galaxy Evolution (e-MERGE) Survey</i> *Core member of the Deep Fields WG of the <i>Lofar Two-Metre Sky Survey (LoTSS)</i> key project *Member of the <i>MeerKAT International GHz Tiered Extragalactic Exploration (MIGHTEE)</i> survey
Invited talks (last 5 years; selection)	2025: Sixth Workshop on Millimetre Astronomy in Italy, Bologna (Italy) - Invited Review: <i>Synergies between SKA and ALMA</i> 2025: Italian Workshop on WST, Napoli (Italia) - Invited Review: <i>Synergies between SKA and WST</i> 2024: LOFAR and MeerKAT synergies workshop (Stellenbosh, SA): <i>Radio deep fields: synergies with Euclid and future plans towards MeerKAT+ and LOFAR 2.0</i> 2024: Workshop Galaxies & AGN with the first Euclid data and beyond, Bologna (Italy): <i>Euclid in the SKA Era: synergies with radio surveys</i> 2023: Cosmology 2023, Trieste (Italy): <i>The SKA project: the promises of next-generation radio</i>

surveys

2023: EAS Annual Meeting - Session LS12: *A radio window on galaxy/AGN co-evolution*
2022: Rubin Observatory LSST(at)Europe4 - Shaping the European Contribution to LSST, Roma (Italia): *Synergies between LSST and SKA*
2021: AGN Tournaments series: *The nature of radio AGNs: what makes them loud?*
2021: Workshop SKASTLE: *The SKA Project (from an Italian perspective)*

Bologna, April 15th, 2025