Amedeo Balbi

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Current Position

2017– Associate Professor of Astronomy and Astrophysics.
Department of Physics, University of Rome Tor Vergata, Italy

Research Interests

Astrobiology: Habitability, Biosignatures, Technosignatures, SETI, Origin of Complexity and Life in the Universe

Cosmology: Cosmic Microwave Background, Dark Matter and Dark Energy, Early Universe, Interplay with Fundamental Physics, Philosophy of Cosmology

Qualifications

2018-2028 Qualified for the functions of Full Professor at Italian "Abilitazione Scientifica Nazionale" (02/C1: Astronomy, Astrophysics, Physics of Earth and Planets)

Education

2000 PhD, Astronomy. University of Rome, La Sapienza, Italy

1995 MSc ("Laurea", *cum laude*), Physics. University of Rome Tor Vergata, Italy

Previous Positions

2002–2017 Research staff, assistant professor (tenured).
Department of Physics, University of Rome Tor Vergata, Italy

2000–2002 Post-doc fellow. Department of Physics, University of Rome Tor Vergata, Italy

1998–2000 Visiting PhD Student. University of California Berkeley (USA)

Honors and Awards

2023 "Premio letterario Galileo per la divulgazione scientifica" (Galileo literary prize for science popularization), for the book *Su un altro pianeta*

2021 "Premio Asimov" for the book *L'ultimo orizzonte*

2018 "Tusculanae Scientiae" Prize

2018 "Royal Astronomical Society Group Achievement Award" (Planck Team)

2015 "Premio Nazionale di Divulgazione Scientifica" (National Prize for Science Popularization) for the book *Cercatori di meraviglia*

2012 "Città delle rose" Literary Prize for Non-Fiction, for the book *Il buio oltre le stelle*

2010 Third Prize, Foundational Questions Institute Essay Contest on "What is ultimately possible in physics?"

2000 Marie Curie EU Post-doctoral Fellowship, University of Oxford, UK (declined)

1995 CNR Post-graduate Fellowship (declined)

Associations/Memberships

2019– IAA SETI Permanent Committee

2018– Italian Society of Astrobiology (SIA)

2009– Foundational Questions Institute (FQXi)

2009– International Astronomical Union (IAU)

2005– Istituto Nazionale di Astrofisica (INAF)

2001– Istituto Nazionale Fisica Nucleare (INFN)

Funding and Grants

As PI or CoI

2023-2025 ASI (Italian Space Agency) Research Grant "Adaptability of cyanobacteria from extreme environments to stellar ultraviolet radiation (ASTERIA)"

2021 H2020 EC Project "NET: Science Together" (Call H2020-MSCA-NIGHT-2020bis)

2020 H2020 EC Project "NET: Science Together" (Call H2020-MSCA-NIGHT-2020)

2018-2021 ASI (Italian Space Agency) Research Grant: Human Exploration of Space, Astrobiology: "Life in Space: Origin, Presence, Persistence of Life in Space, from Molecules to Extremofiles"

2019-2020 FQXi Mini Grant "The distribution of intelligent agents in the universe"

2018-2019 FQXi Mini Grant "Modeling the spatiotemporal distribution of observers in the universe"

2014–2017 INFN's "INDARK" Specific Initiative

2014–2015 University of Roma Tor Vergata "Unconvering the Excellence" Project: "STaI - String Theory and Inflation"

2012–2015 MIUR's PRIN 2010-2011: "The Dark Universe and Cosmic Baryon Evolution: from Present Surveys to Euclid"

2010–2013 ASI/Planck LFI Activity of Phase E2 Work Package: "Cosmological Parameters"

2010–2012 MIUR's PRIN 2008: "Dark Energy and Cosmology from Clusters of Galaxies and the Integrated Sachs-Wolfe Effect"

2005–2007 INAF's PRIN 2005: "Studying Dark Energy through Complementary Cosmological Probes"

As Participant

2021-2022 University of Roma Tor Vergata: "ExHab - Exploring the boundaries of habitability near the solar system and beyond"

2018-2019 University of Roma Tor Vergata "Mission: Sustainability" Project: "TiDEQ - TIme Domain data analysis: from Exoplanets to Quasars"

2009–2010 MIUR's Integrated Action Italy-Spain : "Constraints to Cosmological Parameters from the Combined Study of Cosmic Microwave Background and the Large-Scale Structure of the Universe"

2006–2008 MIUR's PRIN 2006: "Development of a Bolometric Polarization-Sensitive Camera in W Band (W-CAM)"

2004–2006 MIUR's PRIN 2004: "Statistical Tools for Optimal Analysis of CMB Maps"

2002–2004 MIUR's PRIN 2002: "Observational Constraints to Dark Energy from CMB Anisotropy Measurements"

2002–2013 INFN's "PD51" Specific Initiative"

1998–2002 5th EU Framework Programme Network "CMBNet"

Organizing and Coordination

Working Groups

2008–2012 Cosmological Parameters Coordinator for "Cosmological constraints with the ISW effect" Project, Planck Working Group 5

2006–2011 Deputy Coordinator Area 8 "Cosmological Models and Parameters", Planck LFI Core Team

2001–2005 Coordinator "Map to Power Spectrum", Planck CTP Working Group

2000–2001 Coordinator "Science Extraction" Working Group, CMBNet EU Network.

2000 Project Leader "Ionization History of the Universe" Proposal, Planck Science Core Program

2000 Team Leader "Derivation of Cosmological Parameters" Working Group, Planck Science Core Program

2000 Team Leader "CMB Polarization Power Spectrum" Working Group, Planck Science Core Program

Conference Organization

2016 Workshop "String Theory and Inflation", University of Rome tor Vergata

2002–2004 "Villa Mondragone International School on Gravitation and Cosmology"

2002 XV SIGRAV Conference on General Relativity and Gravitation

2001 Workshop "Science and Parameter Extraction", CMBNet EU Network

2001 II CMBNet EU Network General Meeting

Other Academic Duties

2023– Associate Editor (Astrobiology) - Frontiers in Astronomy and Space Science (ISSN 2296-987X)

2021– ASI Working Group on Astrobiology

2020– Editorial Board, Life Journal (ISSN 2075-1729)

2018– Scientific Council, Italian Society of Astrobiology

2018– Scientific Committee, Cosmos Prize

2016– Scientific Committee, BergamoScienza Festival

2012– Scientific Council, Associazione Tuscolana di Astronomia

2010–2012 Academic Senate Representative (Area II) University of Rome Tor Vergata

2010– Editorial Board Member, ISRN Astronomy and Astrophysics

2002– Teaching Committee, PhD Course in Astronomy, Univ. Roma Tor Vergata

Referee for international journals: *The Astrophysical Journal*, *The Astrophysical Journal Letters*, *Astronomy & Astrophysics*, *Monthly Notices of the Royal Astronomical Society*, *Journal of Cosmology and Astroparticles*, *Physical Review*, *Foundations of Physics*, *Acta Astronautica*, *Astrobiology*, *Planetary and Space Science*, *Life*

Main International Collaborations

2022– LIFE (Large Interferometer for Exoplanets)

2017– GAPS (INAF)

2010–2017 Euclid (ESA)

1996–2012 Planck surveyor (ESA)

1998–2001 MAXIMA, BOOMERanG (UC Berkeley/NASA)

1998–2000 COMBAT (NASA)

1998–2000 WOMBAT (UC Berkeley)

Main Visits

2013 University of California, Santa Cruz (USA)

2008 NASA Jet Propulsion Laboratory (USA); California Institute of Technology (USA); University of California, Irvine (USA); University of California, Berkeley (USA); Institute of Cosmology and Gravitation, University of Portsmouth (UK).

2006 Institute of Cosmology and Gravitation, University of Portsmouth (UK); Galileo Galilei Institute, Firenze (I).

2005 Dipartimento di Fisica, Università di Padova (I).

2004 Fermilab, Chicago (USA).

2003 Scuola Normale Superiore, Pisa (I).

2000 University of California, Berkeley (USA); University of Minneapolis (USA).

1996 Theoretical Astrophysics Center, Copenhagen (DK).

Conferences and Seminars

2023 "Il tempo in fisica", invited talk at 'Tempo fisico e tempo trascendentale', Dipartimento di Studi letterari, filosofici e di storia dell'arte, Università di Roma Tor Vergata, October 9, 2023

2023 "The Physics of Habitable Worlds" Invited Lectio Magistralis at 12 Young Researcher Meeting, Monte Porzio Catone Observatory, October 4, 2023

2022 "La fisica dei mondi abitabili" Invited Lectio Magistralis at Giornata Inaugurale Corsi di Laurea in Fisica, Università di Roma Tor Vergata, December 13, 2022

2022 "Galactic Environment of Planetary Systems" invited talk at Europlanet Science Congress 2022,

Granada, Spain, September 19, 2022

2021 "Live Long and Prosper: Why Technosignatures Longevity Matters" invited seminar at NASA Goddard SEEC, September 29, 2021

2021 "Searching for Life in the Universe: How, Where and Why?" invited seminar at University of Perugia / INFN, April 9, 2021

2020 "Galactic habitability revisited" invited seminar at University of Naples, December 16, 2020

2020 "What type of technosignatures can we detect?", invited talk at NASA's TechnoClimes Workshop, August 3, 2020

2020 "Open issues in the search for technosignatures", invited talk at EAS 2020 Meeting, Jun 29, 2020

2020 "Where is everybody? Searching for life in the universe", International School on Modern PhYsics and Research, INSPYRE, INFN LNF, March 30, 2020

2020 "La ricerca di altri mondi (e di vita) nell'universo: dalla speculazione alla scienza", Lincei per la scuola, Gran Sasso Science Institute, L'Aquila, Feb 20, 2020

2019 "SETI and Temporal Copernicanism", SETI INAF Day, Roma, September 25, 2019

2019 "How are intelligent agents distributed in space-time?", FQXi International Conference, Italy, July, 21, 2019

2019 "A history of cosmic habitability", Life in the Universe IBHA International Symposium, INAF–IASF Milano, Italy, July, 15, 2019

2019 "The importance of communicating science", SeedScience Project, Università di Roma "Tor Vergata", March 13 2019

2019 "Supermassive Black Holes and Planetary Habitability", talk given at XV Congresso Nazionale di Scienze Planetarie, Firenze, Italy, Feb 5, 2019

2018 "The Search for Bio and Technosignatures", invited talk at "Finding Earth Twins within 10 pc" meeting, ASI HQ, Rome, Italy, Nov 19-20, 2018

2018 "Supermassive Black Holes and Planetary Habitability", talk given at 6th Workshop of the Italian Astrobiology Society, Napoli, Italy, Oct 29-31, 2018

2018 "Supermassive Black Holes and Planetary Habitability", invited seminar at IAPS/INAF, Rome, Italy, Oct 10, 2018

2018 Invited participant at NASA Technosignatures Workshop (NTW18), Lunar and Planetary Institute, Houston, Texas, September 26-28, 2018

2018 "Supermassive Black Holes and Planetary Habitability", Contributed Talk at the Conference "Life on Earth and beyond: emergence, survivability, and impact on the environment", Bertinoro, Italy, March 19-24, 2018

2018 "A Framework to Address the Spatiotemporal Aspects of SETI", Invited Talk at Decoding Alien Intelligence Workshop, SETI Institute Carl Sagan Center, March 14-16, 2018

2017 "The spatiotemporal aspects of SETI", Invited Talk at SETI INAF Day, Roma, Oct 24, 2017

2017 "Searching for life in the universe", Invited Talk at Incontri di fisica INFN LNF, Oct 4, 2017

2017 "Colonizzeremo mai Marte?", Invited Talk at European Biotech Week: Biotecnologie per lo spazio, Università di Roma Tor Vergata, Sep 28, 2017

2017 "E.T. phone home: searching for life beyond our Earth", Invited Talk at International School of Science Journalism School, Ettore Majorana Foundation and Centre for Scientific Culture, Erice, July 4, 2017

2017 "The Year We Make Contact: Social and Media Aspects of SETI", Invited Talk at SETI Italia Conference, June 5, 2017

2017 "Searching for Life in the Universe: How, Where and Why?" Invited talk at Khalifa University Abu

Dhabi 30-04-2017

2017 "Searching for Life in the Universe: How, Where and Why?" Invited talk at Physics Department, New York University Abu Dhabi 30-04-2017

2016 Invited participant at "The Physics of What Happens", 5th FQXi International Conference, Banff, Canada, Aug 17-22, 2016

2016 "Searching for Life in the Universe: How, Where and Why?", Physics Department Colloquium, University of Turin, Italy, Apr 1

2016 "Alla ricerca di una seconda Terra", Invited Plenary Talk at 5th Workshop of the Italian Astrobiology Society, Trieste, Sep 15-17

2014 "Status of CMB and the cosmological model", Invited Talk at LVIII Congresso SAIt, May 13, 2014

2014 "Primordial gravity waves signatures in the CMB: a review in light of the recent BICEP2 results", Dipartimento di Fisica, Università di Roma Tor Vergata, 17/04/2014

2014 Invited participant at "The Physics of Information", 4th FQXi International Conference, January 5-10, 2014, Vieques, Puerto Rico (USA)

2013 "UCSC Institute for the Philosophy of Cosmology", University of California Santa Cruz, June 23–July 7, 2013

2013 "What have we learned from the CMB". Invited talk at the "Probabilistic and Statistical Techniques for Cosmological Applications". Rome, June 5-7 2013

2012 "Cosmology and time". Invited talk at "The Time Machine Factory" International Conference. Torino, 14-19 Oct 2012

2011 Invited participant at "Setting Time Aright", 3rd FQXi International Conference, Bergen, Norway and Copenhagen, Denmark, August 27 - September 1, 2011

2011 "The limits of cosmology". Invited Talk at Physics Dept & INFN, Padova, Italy

2010 "Planck: Mapping the early universe". International School on AstroParticle Physiscs 2010, 2 Oct 2010, Pisa, Italy

2010 "I blog come esempio di comunicazione scientifica", Invited Talk at Conferenza Comunicare Fisica, Laboratori Nazionali INFN di Frascati.

2008 "The status of the standard cosmological model", Invited Talk at XCIV Congresso della Società Italiana di Fisica, Università di Genova (I).

2006 "Detecting dark energy signatures in the CMB", Institute of Cosmology and Gravitation, University of Portsmouth (UK).

2006 "Cosmology with the CMB". Invited Talk at XXVIII Congresso di Fisica Teorica, Cortona (I).

2006 "Constraints on Cosmological Parameters". Invited Talk at International Conference on "CMB and Physics of the Early Universe", Ischia (I).

2006 "Cosmology from Planck". Invited Talk at Francesco Melchiorri Memorial Conference, Università "La Sapienza" Roma (I).

2005 "Measurement of cosmological parameters". Third Workshop on Science with the New Generation of High Energy Gamma-ray Experiments Cividale del Friuli (I).

2004 "A new era of precision cosmology: COBE, WMAP, Planck and beyond". Third Internation Conference on Frontier Science "Physics and Astrophysics in Space", Villa Mondragone, Monteporzio Catone (Rome) (I).

2004 "CMB and precision cosmology: status and prospects". XLVIII Congresso della Societa' Astronomica Italiana, Milano (I).

2003 "Recent Results from the Cosmic Microwave Background". IV Incontro Nazionale di Astrofisica Nucleare, Ferrara (I).

2003 "Constraining Cosmology with the CMB". Scuola Normale Superiore, Pisa (I)

2002 "Cosmologia di precisione con la radiazione cosmica di fondo". LXXXVIII Congresso Nazionale Società Italiana di Fisica, Alghero (I).

2001 "CMB Polarization with Planck". LFI Consortium Meeting, Eibsee (D).

2001 "CMB Polarization: Scientific Case and Data Analysis Issues". International Workshop on Background Polarized Emission from Radio to Microwave Wavelengths, CNR, Bologna (I).

2001 "The Cosmic Microwave Background as a Cosmological Probe". Dipartimento di Fisica, Università di Roma Tor Vergata (I).

2001 "Constraints on Dark Components from the CMB". Giornate Tematiche di Fisica Teorica, IASS "E. R. Caianello", Vietri sul Mare, Salerno (I).

2000 "Results from the MAXIMA mission". Osservatorio di Brera, Merate (I).

2000 "Mapping the Cosmic Microwave Background with the MAXIMA experiment". SISSA, Trieste (I).

2000 "Cosmological Parameter Estimation from CMB Power Spectrum". LFI Consortium Meeting, Jodrell Bank (UK).

2000 "Cosmological Parameter Estimation from CMB Experiments". CAPP 2000, Verbier (CH).

2000 "Constraints on Cosmological Parameters from the MAXIMA-1 Data". IX Marcel Grossman Meeting, Roma (I).

2000 "Status of the Maxima Balloon-Borne Experiment and Data". XLIV Congresso Nazionale di Astrofisica, SAIt 2000, Monte Porzio Catone (I).

1999 "WOMBAT: A Database of Microwave Foregrounds". LFI Consortium Meeting, Anacapri (I).

1998 "Constraining Cosmological Parameters with Cosmic Microwave Background Observations". INPA/LBNL, Berkeley (USA).

Teaching

Full Courses – University of Rome Tor Vergata

2022– Fisica - 7 CFU. Laurea in Scienze Biologiche.

2022– Astrobiology and Habitability - 6 CFU. Laurea magistrale in Fisica.

2018–2021 Fisica Generale I - 6 CFU. Laurea in Scienza e Tecnologie dei Media.

2012–2021 Astrobiologia - 6 CFU. Laurea magistrale in Fisica.

2011 Processi radiativi in astrofisica - 6 CFU. Laurea magistrale in Fisica.

2006–2010 Elementi di Astrofisica 2 - 6 CFU. Corso di laurea in Fisica.

2008–2009 Relatività e Gravitazione - 6 CFU. Corso di laurea specialistica in Scienze dell'Universo.

2004–2007 Astrobiologia - 2 CFU. Corso di laurea specialistica in Scienze dell'Universo.

2002–2004 Laboratorio di Calcolo - 4 CFU. Corso di laurea in Fisica dell'atmosfera.

Lectures

2016– Lezioni di astrobiologia per il Master in Scienza e Tecnologia Spaziale, Università di Roma Tor Vergata

2010-2015 Lezioni di cosmologia per il Master in Scienza e Tecnologia Spaziale, Università di Roma Tor Vergata

2011 "La struttura su grande scala dell'universo", lezione per il corso di formazione interdisciplinare "Simmetrie", nell'ambito del Progetto Lauree Scientifiche a cura del Centro di Ricerca e formazione permanente delle discipline scientifiche

2010 "The Cosmic Microwave Background". International School on AstroParticle Physiscs 2010, 26 Sep - 5 Oct 2010, Pisa, Italy

2010 "La ricerca di pianeti e di vita intorno ad altre stelle", Stage estivo per gli studenti della scuola secondaria promosso dal MIUR, presso l'università di Roma Tor Vergata

2010 "Il tempo cosmico", lezione per il corso di formazione interdisciplinare "Il tempo", nell'ambito del Progetto Lauree Scientifiche a cura del Centro di Ricerca e formazione permanente delle discipline scientifiche

2009 "CMB temperature and polarization anisotropies". School of Astrophysics 'Francesco Lucchin' X Cycle, III Course - Bertinoro, May 24-29

2009 "Cosmological information from large-scale structure'. School of Astrophysics 'Francesco Lucchin' X Cycle, III Course - Bertinoro, May 24-29

2009-2010 "The standard cosmological model". Dottorato in Fisica, Università di Roma Tor Vergata.

2009 "La luce e l'evoluzione dell'universo", lezione per il corso di formazione interdisciplinare "La luce", nell'ambito del Progetto Lauree Scientifiche a cura del Centro di Ricerca e formazione permanente delle discipline scientifiche

2008-2012 "Cosmologia avanzata". Dottorato in Astronomia, Università di Roma Tor Vergata.

2008–2009 "L'Evoluzione del Cosmo". Master in Comunicazione della Scienza e della Tecnologia, Università di Roma Tor Vergata.

2000–2007 Lezioni su radiazione cosmica di fondo, inflazione, energia oscura, nell'ambito dei corsi di Relatività e Gravitazione e di Cosmologia (prof. N. Vittorio). Corso di laurea in Fisica , Università di Roma Tor Vergata.

2000–2004 Lezioni sulla radiazione cosmica di fondo, nell'ambito del corso di Cosmologia (prof. E. Branchini). Corso di dottorato in Fisica, Università di Roma Tre.

2004 "Cosmologia con il CMB". Scuola nazionale di Astrofisica (VII ciclo, IV corso), Asiago (I).

2003 "Theory of CMB Anisotropy". Villa Mondragone International School on Gravitation and Cosmology, Monte Porzio Catone, Roma (I).

2002 "Constraining Cosmology with the CMB". Corso di perfezionamento in Fisica, Scuola Normale Superiore di Pisa.

2001 "High Precision Cosmology". International School of Space Science on Astroparticle and Gamma Ray Physics in Space, L'Aquila (I).

Public Outreach

Main TV and Radio Appearances

2018 "Memex Galileo" (Rai Scuola)

2017 "Space Weekend" (Focus TV)

2016–2017 "C'è Spazio" (TV 2000)

2015 "Nautilus" (Rai Scuola)

2014 "Che tempo che fa" (Rai 3)

2013 "Metropoli" (Rai Tre)

2012 "Cosmo" (Rai Tre)

2010– "Radio3 Scienza" (Radio3)

Frequent appearances as science commentator in national and international TV and radio broadcasts, such as BBC World Service, RSI, Tg3 Rai, Rai Unomattina, TG5, Rai News 24, Rai 5, Rai Gr1, RadioDue, Radio DeeJay, Radio Vaticana, Radio 24, etc.

Newspapers, Magazines, Web

2014– Columnist, “Le Scienze”

2013–2015 Columnist, “Wired”

2010-2015 Blogger, “Il Post”

2010– Editor, *Research Blogging*

2006– Founder, Editor, Keplero.org

Regular articles and interviews on scientific topics on national magazines and newspapers, such as La Repubblica, La Stampa and many others.

Public Conferences

Hundreds of public conferences and keynote speeches for general audiences at prestigious festival and organizations, including the Science Festival of Genoa, the Festival of Science in Rome, the Wired Next Fest, the Book Fair of Turin, TEDxRoma, etc.

Exhibits

2021 “Il nostro posto nel cosmo”, exhibit for Biblioteche di Roma

2014 Scientific consultant for the astrophysics section of the exhibit “In principio”, Complesso monumentale del Broletto, Novara

Publications

Books

L1 *Su un altro pianeta. C'è un futuro per l'umanità fuori dalla Terra?*
Rizzoli (2022)

L2 *Inseguendo un raggio di luce. Alla scoperta della teoria della relatività*
Rizzoli (2021)

L3 *Lassù nell'universo*
Editoriale Scienza (2021)

L4 *L'ultimo orizzonte. Cosa sappiamo dell'universo*
UTET (2019)
(Translations: spanish, corean)

L5 *Dove sono tutti quanti? Un viaggio tra stelle e pianeti alla ricerca della vita*
Rizzoli (2016)

L6 *Cercatori di meraviglia. Storie di grandi scienziati curiosi del mondo*
Rizzoli (2014)

L7 *Cosmicomic. Gli uomini che scoprirono il big bang*
Codice (2013)
(Translations: spanish, portuguese, french, corean)

L8 *Il buio oltre le stelle. L'esplorazione dei lati oscuri dell'universo*
Codice (2011)

L9 *Seconda stella a destra: Vite semiserie di astronomi illustri*
De Agostini (2010)

L10 *La musica del Big Bang: Come la radiazione cosmica di fondo ci ha svelato i segreti dell'Universo.*
Springer (2007)
English translation:
The Music of the Big Bang: The Cosmic Microwave Background and the New Cosmology.
Springer, NY (2008)

Refereed Articles

A1 *Planetary Scale Information Transmission in the Biosphere and Technosphere: Limits and Evolution*
Lingam, M., Frank, A., Balbi, A. *Life* 13, 1850 (2023)

A2 *The Oxygen Bottleneck for Technospheres*
Balbi, A., & Frank, A., accepted in *Nature Astronomy*, *arXiv e-prints*, arXiv:2308.01160 (2023)

A3 *Beyond mediocrity: how common is life?*
Balbi, A., & Lingam, M., *Monthly Notices of the Royal Astronomical Society*, 522, 3117 (2023)

A4 *A Bayesian Analysis of Technological Intelligence in Land and Oceans*
Lingam, M., Balbi, A., Mahajan, S.M. *The Astrophysical Journal*, 945, 23 (2023)

A5 *Identification of far-red light acclimation in an endolithic Chroococcidiopsis strain and associated genomic features: Implications for oxygenic photosynthesis on exoplanets*
Billi, D., Napoli, A., Mosca, C., Fagliarone, C., de Carolis, R., Balbi, A., et al. *Frontiers in Microbiology* 10.3389/fmicb.2022.933404 (2022)

A6 *The impact of AGN outflows on Galactic habitability*
Ambrifi, A., Balbi, A., Lingam, M., Tombesi, F. and Perlman, E., *Monthly Notices of the Royal Astronomical Society*, 512(1), pp. 505–516 (2022)

A7 *A birth-death-migration model for life in astrophysical environments*
Lingam, M., Grimaldi, C., & Balbi, A., *Monthly Notices of the Royal Astronomical Society*, 509, 4365 (2022)

A8 *Excitation properties of photopigments and their possible dependence on the host star*
Lingam, M., Balbi, A., Mahajan, S. M. *The Astrophysical Journal Letters*, 921 L41 (2021)

A9 *Feasibility of Detecting Interstellar Panspermia in Astrophysical Environments*
Grimaldi, C., Lingam, M., Balbi, A. *The Astronomical Journal*, 162, 23 (2021)

A10 *Longevity is the key factor in the search for technosignatures*
Balbi, A. & Ćirković, M. M. *The Astronomical Journal*, 161, 222 (2021)

A11 *Evaluation of investigational paradigms for the discovery of non-canonical astrophysical phenomena*
Singam, C. A. K., et al., *arXiv e-prints*, arXiv:2011.10086 (2020)

A12 *The Impact of Tidal Disruption Events on Galactic Habitability*
Pacetti, E., Balbi, A., Lingam, M., Tombesi, F., and Perlman, E., *Monthly Notices of the Royal Astronomical Society* 498, 3, 3153–3157 (2020)

A13 *Quantifying the information impact of future searches for exoplanetary biosignatures*
Balbi, A.; Grimaldi, C., *Proceedings of the National Academy of Science* 117 (35) 21031-21036 (2020)

A14 *The Habitability of the Galactic Bulge*
Balbi, A.; Hami, M.; Kovačević, A., *Life* 10(8), 132 (2020)

A15 *Copernicanism and the typicality in time*
Ćirković, M. M. and Balbi, A., *International Journal of Astrobiology*, 19(2), 101-109 (2020)

A16 *Survivability of Anhydrobiotic Cyanobacteria in Salty Ice: Implications for the Habitability of Icy Worlds*
Barbara Cosciotti, Amedeo Balbi, Alessandra Ceccarelli, Claudia Fagliarone, Elisabetta Mattei, Sebastian Emanuel Lauro, Federico Di Paolo, Elena Pettinelli, Daniela Billi *Life* 9(4), 86 (2019)

A17 *Comparative analysis of the influence of Sgr A* and nearby active galactic nuclei on the mass loss of known exoplanets*
Wislocka, A. M., Kovacevic, A. B. and Balbi, A., *Astronomy and Astrophysics* 624, A71 (2019)

A18 *The Impact of the Temporal Distribution of Communicating Civilizations on their Detectability*
Balbi, A. *Astrobiology*, 18(1): 54-58 (2018)

A19 *The habitability of the Milky Way during the active phase of its central supermassive black hole*
Balbi, A. & Tombesi, F., *Scientific Reports* 7:16626 (2017)

A20 *Quadrant asymmetry in the angular distribution of cosmic microwave background in the Planck satellite data*
Santos, L., Cabella, P., Villela, T., Balbi, A., Vittorio, N., & Wuensche, C. A., *Astronomy and Astrophysics*, 569, AA75 (2014)

A21 *Searching for a dipole modulation in the large-scale structure of the Universe*
Fernández-Cobos, R., Vielva, P., Pietrobon, D., Balbi, A., Martínez-González, E., & Barreiro, R. B., *Monthly Notices of the Royal Astronomical Society*, 441, 2392 (2014)

A22 *Planck intermediate results. XIII. Constraints on peculiar velocities*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 561, A97 (2014)

A23 *Neutrinos and dark energy constraints from future galaxy surveys and CMB lensing information*
Santos, L., Cabella, P., Balbi, A., & Vittorio, N., *Physical Review D*, 88, 043505 (2013)

A24 *Planck intermediate results. XII: Diffuse Galactic components in the Gould Belt system*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 557, A53 (2013)

A25 *Planck intermediate results. XI. The gas content of dark matter halos: the Sunyaev-Zeldovich-stellar mass relation for locally brightest galaxies*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 557, A52 (2013)

A26 *Planck intermediate results. X. Physics of the hot gas in the Coma cluster*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 554, A140 (2013)

A27 *Planck intermediate results. IX. Detection of the Galactic haze with Planck*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 554, A139 (2013)

A28 *Planck intermediate results. VIII. Filaments between interacting clusters*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 550, A134 (2013)

A29 *Planck intermediate results. VII. Statistical properties of infrared and radio extragalactic sources from the Planck Early Release Compact Source Catalogue at frequencies between 100 and 857 GHz*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 550, A133 (2013)

A30 *Planck intermediate results. VI. The dynamical structure of PLCKG214.6+37.0, a Planck discovered triple system of galaxy clusters*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 550, A132 (2013)

A31 *Planck intermediate results. V. Pressure profiles of galaxy clusters from the Sunyaev-Zeldovich effect*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 550, A131 (2013)

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