

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: Biosignatures, Technosignatures, Habitability, 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

2018-2027 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

- 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 Col

- 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 Extremophiles”
- 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 “Unconverging 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

- 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 Scientific Activities

- 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

- 2017– GAPS (INAF)
- 2010– 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

- 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 SAIIt, 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 Physics 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 International 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 Società 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, SAI 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 Physics 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– Columnist, “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 *Inseguendo un raggio di luce. Alla scoperta della teoria della relatività*
Rizzoli (2021)
- L2 *Lassù nell'universo*
Editoriale Scienza (2021)
- L3 *L'ultimo orizzonte. Cosa sappiamo dell'universo*
UTET (2019)
- L4 *Dove sono tutti quanti? Un viaggio tra stelle e pianeti alla ricerca della vita*
Rizzoli (2016)
- L5 *Cercatori di meraviglia. Storie di grandi scienziati curiosi del mondo*
Rizzoli (2014)
- L6 *Cosmicomic. Gli uomini che scoprirono il big bang*
Codice (2013)
(Translations: spanish, portuguese, french, corean)
- L7 *Il buio oltre le stelle. L'esplorazione dei lati oscuri dell'universo*
Codice (2011)
- L8 *Seconda stella a destra: Vite semiserie di astronomi illustri*
De Agostini (2010)
- L9 *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 *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. 505516 (2022)
- A2 *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)
- A3 *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)
- A4 *Feasibility of Detecting Interstellar Panspermia in Astrophysical Environments*
Grimaldi, C., Lingam, M., Balbi, A. *The Astronomical Journal*, 162, 23 (2021)
- A5 *Longevity is the key factor in the search for technosignatures*
Balbi, A. & Ćirković, M. M. *The Astronomical Journal*, 161, 222 (2021)

- A6 *Evaluation of investigational paradigms for the discovery of non-canonical astrophysical phenomena*
Singham, C. A. K., et al., *arXiv e-prints*, arXiv:2011.10086 (2020)
- A7 *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, 31533157 (2020)
- A8 *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)
- A9 *The Habitability of the Galactic Bulge*
Balbi, A.; Hami, M.; Kovačević, A., *Life* 10(8), 132 (2020)
- A10 *Copernicanism and the typicality in time*
Ćirković, M. M. and Balbi, A., *International Journal of Astrobiology*, 19(2), 101-109 (2020)
- A11 *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)
- A12 *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)
- A13 *The Impact of the Temporal Distribution of Communicating Civilizations on their Detectability*
Balbi, A. *Astrobiology*, 18(1): 54-58 (2018)
- A14 *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)
- A15 *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)
- A16 *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)
- A17 *Planck intermediate results. XIII. Constraints on peculiar velocities*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 561, A97 (2014)
- A18 *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)
- A19 *Planck intermediate results. XII: Diffuse Galactic components in the Gould Belt system*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 557, A53 (2013)

- A20 *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)
- A21 *Planck intermediate results. X. Physics of the hot gas in the Coma cluster*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 554, A140 (2013)
- A22 *Planck intermediate results. IX. Detection of the Galactic haze with Planck*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 554, A139 (2013)
- A23 *Planck intermediate results. VIII. Filaments between interacting clusters*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 550, A134 (2013)
- A24 *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)
- A25 *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)
- A26 *Planck intermediate results. V. Pressure profiles of galaxy clusters from the Sunyaev-Zeldovich effect*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 550, A131 (2013)
- A27 *Planck intermediate results. IV. The XMM-Newton validation programme for new Planck galaxy clusters*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 550, A130 (2013)
- A28 *Planck intermediate results. III. The relation between galaxy cluster mass and Sunyaev-Zeldovich signal*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 550, A129 (2013)
- A29 *Planck intermediate results. II. Comparison of Sunyaev-Zeldovich measurements from Planck and from the Arcminute Microkelvin Imager for 11 galaxy clusters*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 550, A128 (2013)
- A30 *Planck intermediate results. I. Further validation of new Planck clusters with XMM-Newton*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 543, A102 (2012)
- A31 *Real-time cosmology*
Quercellini, C., Amendola, L., Balbi, A., Cabella, P., Quartin, M., *Physics Reports*, 521, 3 (2012)
- A32 *Forecasting isocurvature models with CMB lensing information: Axion and curvaton scenarios*
Santos, L., Cabella, P., Balbi, A., & Vittorio, N., *Physical Review D*, 86, 023002 (2012)
- A33 *Planck early results. XXVI. Detection with Planck and confirmation by XMM-Newton of PLCK G266.6-27.3, an exceptionally X-ray luminous and massive galaxy cluster at $z \sim 1$*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 536, A26 (2011)
- A34 *Planck early results. XXV. Thermal dust in nearby molecular clouds*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 536, A25 (2011)

- A35 *Planck early results. XXIV. Dust in the diffuse interstellar medium and the Galactic halo*
Planck Collaboration, et al., *Astronomy and Astrophysics*, 536, A24 (2011)
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