Curriculum Vitae of Prof. Raul Jimenez (PhD)

January 20, 2026

Current position:	ICREA Research Professor at ICC, University of Barcelona.
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	University of Barcelona
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Email:	raul.jimenez@icc.ub.edu
Date of birth:	10th January 1967
Place of birth:	Madrid, Spain
Citizenship:	EU (Spanish)

PERSONAL STATEMENT

I am a theoretical physicist interested in a number of problems in cosmology and astrophysics. My research ranges from the physics of the early universe to the physics of stars. The main drive of my research is to connect ideas in theoretical physics to observable phenomena and in turn explain new observations. The main objective of my research is to understand the fundamental laws of nature using cosmological and astronomical observations. My main topics of research change from time to time to adjust to advances in the field and include: cosmological parameters, the age of the universe, stellar evolution, stellar populations, high-redshift galaxies, dark energy, the early universe, large scale structure, the cosmic microwave background, galaxy formation and evolution, star formation, and the interstellar medium. I am especially interested in analysing large datasets and in the development of rigorous statistical algorithms. In the past years I have focussed on developing methods and techniques that are independent of the assumptions of the cosmology model to explore the fundamental laws of nature. I have also developed new models to explain the origin and evolution of the Universe that have the feature of having no free parameters and are based on quantum gravity and information theory. I am very active in science and public policy and have recently written extensively on the role that Bayesian statistics, large data, machine and deep learning and robotization can have on our societies.

Among my main contributions to our understanding of the Universe are: the first evidence of dark energy from the ages of high redshift galaxies and globular clusters, the origin of dark galaxies, the first clue of how galaxies are assembled as a function of time, the first determination of the expansion history of the Universe, the role of cosmic explosions in the survival of exo-life, the role of symmetries in the universe, a lower bound to the cosmological constant, an accurate and precise age of the universe, the development of theoretical tools to model analytically the large scale structure, the first strong evidence for the hierarchy of neutrinos and a new model of the universe based on quantum information theory and gravity.

EDUCATION

Ph.D. in Physics, Niels Bohr Institute, University of Copenhagen, June 1995. "On Globular Clusters, Mass Loss, Stellar Evolution and the Age of the Universe". Supervisors: *Uffe Jørgensen* & *Bernard Pagel*.
M.Sc in Theoretical Physics, Autonomous University of Madrid, Dec. 1992.
B.Sc. in Theoretical Physics with Honors, Autonomous University of Madrid, June 1991.
High-School Diploma, I.E.S. Cervantes, Madrid, June 1985.
Master Builder Degree, 1982.

CAREER

9/2015 – 8/2016: Radcliffe Fellow, Harvard University, USA.
8/2014 – 1/2026: Visiting Professor, ICIC, Imperial College, London, UK.
9/2012 – 8/2013: Scientific Associate. CERN Theory Group, CERN, Switzerland.
9/2007 – present: ICREA Professor of Theoretical Physics and Cosmology. University of Barcelona, Spain.
6/2007 – 4/2009 Visiting Senior Research Fellow. Dept. of Astrophysical Sciences, Princeton University, USA.
1/2003 – 8/2007: Professor. Dept. of Physics & Astronomy, University of Pennsylvania, USA.
7/2000 – 12/2002: Professor. Dept. of Physics & Astronomy, Rutgers University, USA.
9/1999 – 8/2000: PPARC Advanced Fellow. Institute for Astronomy. University of Edinburgh, UK.
9/1995 – 8/1999: Research Fellow. Institute for Astronomy. University of Edinburgh , UK.
1/1993 – 8/1995: European Union HCM fellow. Niels Bohr Institute and NORDITA, Copenhagen, DK.
1991 – 1992: Autonomous University of Madrid/CAJAMADRID fellow. Madrid, Spain.
1983 – 1991: During this period I worked, concurrently as I studied, as a master builder and car mechanic. I am fully certified in both trades and have the degree of master builder.

PROFESSIONAL ESTEEM INDICATORS

Citation count: > **24000**; h-factor: **77**; Number of reads: > **150000**
There are: **6** papers > 1000 citations; **10** papers > 500 citations; **19** papers > 250 citations; **60** papers > 100 citations; **188** papers > 10 citations (all data according to Google Scholar and ADS). Total of **305** publications. Organizer/session convener at more than **30** international symposia. Over **350** invited presentations, including seminars, colloquia, and international conferences.

LONG TERM VISITING POSITIONS

7/2019: Radcliffe Fellow, Harvard University, USA.
9/2018 – 12/2018: Distinguished visiting CNRS professor at the Henri Poincare Institute program "Analytics, Inference, and Computation in Cosmology", Paris, France.
7/2018: Radcliffe Fellow, Harvard University, USA.
7/2017: Radcliffe Fellow, Harvard University, USA.
9/2015 – 8/2016: Visiting Professor, ITC, Harvard University, USA.
3/2014 – 2/2017: Scientific Associate. Computer Science, IACS, Harvard University, Cambridge, USA.
6/2012: Faculty Member. GGI, Florence, Italy.
5/2011 – 7/2015: Visiting Scientist at Theory Group, CERN, Geneva, Switzerland.
11/2010: HEPHACOS Visiting Professor, IFT/UAM, Madrid, Spain.
9/2010: Distinguished Visiting Professor, Department of Astronomy, PUC, Santiago de Chile, Chile.
3/2010: Visiting Professor. IPMU, University of Tokyo, Japan.
9/2009: Scientific Associate. CERN Theory Division, Geneva, Switzerland.
1/2009 – 3/2009: Faculty Member. GGI, Florence, Italy.
8/2007 – 10/2007: Faculty Member. KITP, Santa Barbara, USA.
12/2006: Distinguished Visiting Professor. ASTROCAM. Madrid, Spain.
4/2006 – 5/2006: Distinguished Visiting Theory Professor. Carnegie Observatories. Pasadena, USA.
11/2005 – 12/2005: Visiting member. Institute for Advanced Studies, Princeton, USA.
10/2005: Visiting Professor. Dept. of Physics. U. of California Santa Barbara, USA.
10/2005: Visiting Professor. Theoretical Astrophysics Group, Caltech, USA.
7/2005: Visiting Professor. Institute for Astronomy, The University of Edinburgh, UK.
8/2003: Visiting Professor. Theoretical Astrophysics Group, Caltech, USA.
7/2002 – 8/2002: Visiting Professor. Institute for Astronomy, The University of Edinburgh, UK.
7/2001 – 8/2001: Visiting Professor. Institute for Astronomy, The University of Edinburgh, UK.
5/2001 – 6/2001: Visiting Scholar. Theoretical Astrophysics Group, Caltech, USA.
5/2000 – 8/2000: Visiting Scholar. Theoretical Astrophysics Group, Caltech, USA.
2/1999 – 5/1999: Visiting Scholar. Columbia University, NYC, USA.
6/1993 – 8/1993: Visiting Scholar. University of Delaware, USA.

PROFESSIONAL HONOURS AND AWARDS

Ranked top 0.5% world-wide scientist by Stanford, 2017-2025 (A standardized citation metrics author database).
Henri Poincaire Institute/CNRS distinguished visiting professor, Fall 2018.
Radcliffe Fellow, Harvard University, 2015.
Distinguished Visiting Scientist at Joint ALMA Observatory, 2014.
Salvador de Madariaga award, 2013.
EU-IRG award, 2007.
Distinguished visiting professor at the ASTROCAM, 2006.
Distinguished visiting theory professor at the Carnegie Observatories in Pasadena, 2006.
PPARC Advanced Fellowship, 1999-2004.
Spanish Research Council Postdoctoral Fellowship, 1996-1997.
European Union (TMR, Marie Curie) Fellowship, 1995.
European Union (HCM, Marie Curie) Fellowship, 1993-1994.
Autonomous University of Madrid/CAJAMADRID Fellowship, 1991-1992.
Tuition Scholarship from the Spanish Research Council, 1986-1990.

SERVICE TO THE ASTRONOMICAL COMMUNITY

Referee for ApJ, A&A, MNRAS, PRD, PRL, PLB, Nature and Science. I serve as a grant reviewer for PPARC (UK), EU grants and NASA, NSF (USA), CONACYT (Mexico) and Danish NSF.

SERVICE TO THE COMMUNITY

At Rutgers I served on the PhD qualifier committee ($2001-2002$). At UPenn I served on the PhD recruiting committee (2003) and the computing committee ($2004-2006$). I also served on the college of Arts & Sciences initiative to review the general requirement education. I organized the astro-seminars in Fall 2005 and Fall 2006. I also served on two faculty search committees at UPenn: hire of Ravi Sheth and Mariangela Bernardi (2004) and hire of Masao Sako (2006). In Barcelona I have helped to reorganise the teaching curriculum and the cosmology group attracting long term postdoctoral fellows and faculty members (hire of Olga Mena, Paolo Padoan, Steve Giddings, Cristiano Germani, Nick Kaiser, Fred Courbin). I am leading the CosmoCLASSIC collaboration (https://sites.google.com/a/g.harvard.edu/cosmoclassic/home). I am the main organizer and originator of the highly successful "Unsolved Problems in Astrophysics and Cosmology" which takes place every 4 years and started in 2002 (https://physics.elte.hu/conf2018).

FUNDING HISTORY

ERC Synergy "RedH0t" (co-I): September 2026 - August 2032 (EUR 12,500,000).
Simons Foundation "The Geometry of Flows" (PI); September 2025 - August 2035 ($ 2,000,000).
Maria de Maeztu excellence unit (co-I) to ICCUB CEX2025-000918-M; April 2025 - December 2028 (EUR 2,000,0000).
Plan Generacion del Conocimiento (co-PI) PID2022-141125NB-I00; September 2023 - August 2027 (EUR 340,000).
AGAUR SGR-Cat 2021/00872 (co-PI) January 2022 - June 2025 (EUR 40,000).
Maria de Maeztu excellence unit (co-I) to ICCUB CEX2019-000918-M; January 2020 - December 2024 (EUR 2,000,0000).
Plan Generacion del Conocimiento (PI) PGC2018-098866-B-I00; January 2019 - December 2022 (EUR 228,448).
AGAUR GGC2017A (co-PI); January 2018 - December 2019 (EUR 65.896).
Radcliffe fellowship 2015-2016 ($100,000).
Plan Nacional (PI) AYA2014-58747-P; January 2015 - December 2018 (EUR 227,480).
Maria de Maeztu excellence unit (co-I) to ICCUB MDM-2014-0369; January 2015 - December 2018 (EUR 2,000,0000).
Royal Society, International Exchanges 2014/R1 (co-I) September 2014 - September 2017 (GBP 12,000).
AGAUR SGR2014 (PI); September 2014 - August 2016 (EUR 15,000).
Plan Nacional (co-PI); FPA2011-29678; January 2012 - December 2014 (EUR 150,040).
AGAUR SGR2009 (PI); September 2009 - December 2013 (EUR 42,640).
Plan Nacional (co-PI) AYA2008-03531; January 2009 – December 2011 (EUR 240,000).
DOE grant (co-PI); September 2008 – August 2009 ($ 108,800).
IRG EU grant (PI); October 2007 – October 2011 (EUR 100,000).

I3 grant (PI); October 2007 – December 2008 (EUR 50,000).
CONSOLIDER-INGENIO grant (co-PI); September 2007 – August 2012 (EUR 5,000,000).
DOE grant DE-FG02-07ER41514 (co-PI); September 2007 – August 2008 ($100,000).
NASA GALEX legacy grant (PI); September 2007 – August 2009 ($125,000).
NSF grant 0607654 (co-PI); July 2006 – June 2009 ($354,707).
NSF-PIRE grant 0530095 (Penn PI); October 2005 – September 2010 ($2,350,000).
NSF grant AST-0507768 (co-I); July 2005 – June 2008 ($351,948).
NASA-ATP grant NNG05GG01G (co-I); July 2005 – June 2008 ($310,000).
NSF grant AST-0408698 for the Atacama Cosmology Telescope (co-I); January 2004 - January 2009 ($10,900,000).
University of Pennsylvania: start-up package (2003) ($100,000).
NSF grant AST-0206031 (PI); July 2003 – August 2006 ($225,000).
PPARC grant; Summer salary as a Visiting Professor at the IfA, The University of Edinburgh, 2001-2002 ($50,000).
Rutgers University (2000); start-up package ($100,000).

Total of ∼$ 50,000,000 (not adjusted for inflation)

TEACHING EXPERIENCE

I have taught the following courses at UAB (Barcelona): Advanced Astrophysics (graduate course, Fall 2007). I have taught the following courses at UPenn: The interstellar medium (graduate course, Spring 2003); Survey of the Universe (undergraduate course 001, Fall 2003; Spring 2006); Classical Electrodynamics (graduate course 516, Spring 2004; Spring 2005); Introduction to Astrophysics (undergraduate course 011, Fall 2004; Spring 2006; Fall 2006).

I have taught the following undergraduate courses at Rutgers: Principles of Astrophysics (Course 341; Fall 2001, Fall 2002); Principles of Astrophysics (Course 342; Spring 2002).

I was the co-PI of the NSF-PIRE funded "Southern Cosmology Survey" education initiative. This 5-year project (2005-2010) consisted of twice a year summer schools in Princeton, Barcelona, South Africa and Chile for advanced undergraduates and graduate students to educate them in subjects of frontier research in Cosmology and Astrophysics.

SUPERVISED PhD STUDENTS

Louisa Nolan (Edinburgh, PhD 1997–2001, co-supervised with James Dunlop), Christian Reichardt (Caltech, SURF student 2000), Benjamin Panter (Edinburgh, PhD 2001-2004; co-supervised with Alan Heavens), Carolyn Sealfon (UPenn, PhD 2003-2006), Rita Tojeiro (Edinburgh, PhD 2005-2008; co-supervised with Alan Heavens), Zach Berta (Barcelona, MsC 2007), Joaquin Prieto (Universidad Catolica Chile, PhD 2005-2010), Hector Gil (Barcelona, PhD 2008-2012), Michele Moresco (Bologna, 2010-2012; co-supervised with Andrea Cimatti), Francesca Fragkoudi (Barcelona, MsC 2011), David Figueruelo Hernan (MsC 2018-2019), David Valcin (2017-2021; co-supervised with Licia Verde), Ali Rida Khalifeh (2018-2022), Beatriz Hernandez-Molinero (2021-2025; co-supervised with Carlos Pena-Garay), Pedro Tarancon (2023-2027; co-supervised with David Mateos), Pablo Tejerina (2023-2027), Leonid Sarieddine (2024-2028), Pau Sole Vilaro (2024-2028; co-supervised with David Mateos), Aariam Abdelaziz (2025; visiting PhD student), Marisol Traforetti (2025-2029), Ali Kalout (2025-2029).

SUPERVISED POSTDOCTORAL RESEARCHERS

Chris Power (2002), Carlos Hernandez-Monteagudo (2005-2007), Viviana Acquaviva (2006-2008), Abilio Mateus (2007), Carmelita Carbone (2007-2009), Beth Reid (2008-2010), Anastasios Avgoustidis (2009), Christian Wagner (2009-2012), Ben Hoyle (2009-2012), Joaquin Prieto-Brito (2010-2013), Jorge Noreña (2010-2013), Aday Robaina (2010-2012), Roland de Putter (2010-2012), Jose Manuel Marti (2011), Antonio Cuesta (2013-2017), Fergus Simpson (2014-2017), Emilio Bellini (2014-2016), Bin Hu (2016-2017), Alvise Racanelli (2016-2018), Benedict Kalus (2017-2020), Daniele Bertacca (2018), Ilia Musco (2018-2019), Alex Mead (2018-2019), Davide Bianchi (2018-2021), Hector Gil-Marin (2018-2021; La Caixa junior

leader), Davide Gualdi (2019-2022), Nils Shoneberg (2021-2024), Ben Giblin (2022-2023), Konstantin Kharchev (2025-2028).

OBSERVING EXPERIENCE

Observer at ESO/La Silla, La Palma (INT, WHT) and Hawaii (Keck, UKIRT).
HST observing time granted in Cycle 7 (WFPC2 and NICMOS).
GALEX legacy program granted in Cycle 3 (207 ksec).
GTC: outflow program (2010).

INVITED REVIEW TALKS, COLLOQUIA AND SEMINARS (about 8–10 a year accepted; I decline a similar number of invitations each year to which I send my students/postdocs)

September 2026 *Invited keynote speaker*: "CosmoClassic", Asiago, Spain.
August 2026 *Invited keynote speaker*: "New Frontiers in Cosmology", A Coruna, Spain.
July 2026 *Invited keynote speaker*: "Unsolved problems 2026", ISTA, Vienna, Austria.
June 2026 *Invited keynote speaker*: "The Geometry of Flows", NYU, New York, USA.
March 2026 *Invited keynote speaker*: "Beyond Machine Learning", Laboratorio Subterraneo Canfranc, Canfranc, Spain.
February 2026 *Invited colloquium*: " Sommerfeld Theory Colloquium", LMU, Munich, Germany.
November 2025 *Invited keynote speaker*: "7th BIG Meeting: Barcelona Initiative for Gravitation", Barcelona, Spain.
October 2025 *Invited keynote speaker*: "The Geometry of Flows", ETH, Zurich, CH.
October 2025 *Invited keynote speaker*: "The Complex Universe", IFT-UAM, Madrid, Spain.
September 2025 *Invited seminar*: "The Denario Project", ICCUB, Barcelona, Spain.
September 2025 *Invited speaker*: "Learning the Deep Mysteries of Nature with Cosmology", Fiera de Primiero, IT.
August 2025 *Invited speaker*: "Lviv Data Science Summer School 2025", Lviv, Ukraine.
July 2025 *Invited speaker*: "SEENET-MTP' workshop', Bucharest, Romania.
July 2025 *Invited speaker*: "CERN/SEENET-MTP/ICTP PhD Training Program", Magurele, Romania.
June 2025 *Invited speaker*: "European Astronomical Society, EAS 2025", Cork, Dublin.
May 2025 *Invited keynote speaker*: "The Dawn of Gravitational Wave Cosmology", Benasque, Spain.
April 2025 *Invited keynote speaker*: "The Geometry of Flows", IAS, Princeton, USA.
November 2024 *Invited keynote speaker*: "Turbulent Flows and Structure", Simons Foundation, NYC, USA.
Oct. 2024 *Invited keynote speaker*: "4th Conf. on Quantum Gases, Fundamental Interactions, and Cosmology", Pisa, IT.
October 2024 *Invited Speaker*: "The Complexity of the Cosmos", GSSI, L'Aquila, Italy.
September 2024 *Invited speaker*: "CosmoClassic", Asiago, Italy.
September 2024 *Invited speaker*: "Asiago Cosmology Dedicated Meeting", Asiago, Italy.
August 2024 *Invited seminar*: Kavli IPMU, Tokyo, Japan.
July 2024 *Invited speaker*: "Quantum Aspects of Inflationary Cosmology", MIAPbP, Munich, Germany.
May 2024 *Invited seminar*: School of Mathematics and Physics, The University of Queensland, Brisbane, Australia.
May 2024 *Invited seminar*: SIfA, University of Sidney, Sidney, Australia.
February 2024 *Invited seminar*: IA: Investigación y Sociedad, UB, Barcelona, Spain.
October 2023 *Invited seminar*: Laboratorio Subterraneo Canfranc, LSC, Canfranc, Spain.
October 2023 *Invited speaker*: "Asiago Cosmology Dedicated Meeting", Asiago, Italy.
October 2023 *Invited seminar*: Data Science Department. SISSA, Italy.
September 2023 *Invited keynote speaker*: "The Complexity of the Cosmos", GSSI, L'Aquila, Italy.
September 2023 *Invited speaker*: "Model Independent Cosmology", Jornada COSCE 2023, Madrid, Spain.
March 2023 *Invited speaker*: "MAGIC23", Praia do Rosa, Brasil.
November 2022 *Invited seminar*: Joint Cosmology Seminar, Imperial College, London, UK.
October 2022 *Invited colloquium*: Bologna Joint Astrophysical Colloquium (JAC), Bologna, IT.
October 2022 *Invited keynote speaker*: "Quantum Information and Cosmology", GSSI, L'Aquila, Italy.
September 2022 *Invited speaker*: "Asiago Cosmology Dedicated Meeting", Asiago, Italy.
September 2022 *Invited speaker*: "Vulcano 2022-Frontier Objects in Astrophysics and Particle Physics", Elba, Italy.

June 2022 *Invited speaker*: "EAS 2022; Shedding light on the dark side of the Universe", Valencia, Spain.
June 2022 *Invited seminar*: Physics Department, University of Illinois, Urbana-Champaign, USA.
June 2022 *Invited speaker*: "Astrophysics in the Next Decade: From the First Stars to Intelligent Life", USA.
April 2022 *Invited keynote speaker*: "Likelihood Free Inference", IAP, Paris, France.
November 2021 *Invited keynote talk*: "Accelerating Universe 2.0", MIAPP, Munich, Germany.
September 2021 *Invited colloquium*: Physics Dept. Nis University, Nis, Serbia.
September 2021 *Invited keynote talk*: "BW2021 congress", Belgrade, Serbia.
September 2020 *Invited talk*: "Workshop on Quantum Fields and Nonlinear Phenomena", Craiova, Romania.
September 2020 *Invited lecture*: "SEENET-MTP graduate school", Craiova, Romania.
May 2020 *Invited seminar*: Dept. of Physics and Astronomy, Padova, IT.
January 2020 *Invited colloquium*: Niels Bohr Institute, Copenhagen, DK.
January 2020 *Invited seminar*: IFT/CSIC, Madrid, Spain.
December 2019 *Invited keynote talk*: "Stellar ages across cosmic times", Napa, USA.
December 2019 *Invited keynote talk*: "COSYNE", IAP, Paris, France.
October 2019 *Invited talk*: "Fundamental Physics with Future CMB Probes", IFPU, Trieste, IT.
June 2019 *Invited talk*: "Zooming in on Star Formation", Nafplio, Greece.
June 2019 *Invited plenary talk*: "The nature of Dark Matter and Large Scale Structure", Nicosia, Cyprus.
March 2019 *Invited plenary talk*: "The Most Ancient Heavens", Royal Astronomical Society, London, UK.
February 20019 *Invited seminar*: Dept. of Physics and Astronomy, Padova, IT.
December 2018 *Invited colloquium*: Institut Henri Poincare, Paris, France.
November 2018 *Invited seminar*: ICIC, Imperial College, London, UK.
November 2018 *Invited talk*: "Probing the Dark Universe: OAJ-LSC synergies", Zaragoza, Spain.
September 2018 *Invited talk*: "Analytical Methods", Henri Poincare Institute, Paris, France.
September 2018 *Invited talk*: "Cosmological and Astrophysical Synergies: Tactics for the Latest Era", Tagliolo, Italy.
July 2018 *Invited plenary chair*: "Unsolved Problems in Astrophysics", Budapest, Hungary.
June 2018 *Invited talk*: "Multi-Messenger: The New Frontier of Cosmology", Venice, Italy.
September 2017 *Invited seminar*: Physics Department, American University of Beirut, Lebanon.
June 2017 *Invited colloquium*: Institute for Astronomy, University of Edinburgh, UK.
May 2017 *Invited colloquium*: Astrophysics group, Imperial College, London, UK.
April 2017 *Keynote talk*: "Neutrino Cosmology", CCA Simons Center, New York, USA.
March 2017*Plenary talk*: "XVII International Workshop on Neutrino Telescopes", Venice, IT.
January 2017 *Invited talk*: "The vacuum of the Universe: from cosmology to particle physics", Barcelona, Spain.
November 2016 *Invited talk*: "Cosmoclassic", Paris, France.
July 2016 *Keynote talk*: "JAP@60: Cosmology in the next 35 years", Cortina D'ampezzo, Italy.
April 2016 *Invited seminar*: Physics dept. Case-Western University, Cleveland, USA.
April 2016 *Invited lecture*: CosmoStatSchool, Leon, Mexico.
March 2016 *Invited seminar*: Physics Department Cosmology Seminar, Dartmouth College, USA.
December 2015 *Invited talk*: "Cosmology and First Light: A conference at the IAP in Paris", Paris, France.
November 2015 *Invited colloquium*: Radcliffe colloquium, Harvard University, USA.
November 2015 *Invited seminar*: Dept. of Astrophysical Sciences, Princeton University, USA.
October 2015 *Invited seminar*: Joint Tufts/MIT Cosmology Seminar, USA.
September 2015 *Invited talk*: "Sabino @60", Castiglioncello, Italy.
August 2015 *Invited seminar*: ICIC, Imperial College, London, UK.
May 2015 *Invited colloquium*: Mount Stromlo Observatories, ANU, Australia.
May 2015 *Invited colloquium*: Astronomy Dept., Swinburne University, Australia.
May 2015 *Invited colloquium*: Astronomy Dept., University of Melbourne, Australia.
May 2015 *Invited colloquium*: Physics Dept., University of Melbourne, Australia.
April 2015 *Invited talk*: "Stars, Interstellar Medium, Galaxies and the chemistry between them", Madrid, Spain.
January 2015 *Invited presentation*: "BASP2015", Villars-sur-Ollon, Switzerland.
January 2015 *Invited seminar*: IFT, CSIC-UAM, Madrid, Spain.
October 2014 *Invited talk*: "Multiple Messengers and Challenges in Astro-particle Physics", L'Aquila, Italy.

August 2014 *Invited seminar*: Imperial College, London, UK.
June 2014 *Invited talk*: "Unsolved problems in Cosmology and Astrophysics", Budapest, Hungary.
June 2014 *Invited summary talk*: NAM 2016, UK.
June 2014 *Invited talk*: National Astro-particle Meeting, Canfranc, Spain.
June 2014 *Invited seminar*: Arnold Sommerfeld Center, LMU, Munich, Germany.
May 2014 *Invited seminar*: Racah Institute of Physics, Hebrew University, Israel.
May 2014 *Invited seminar*: i-Core Astrophysics, Israel.
March 2014 *Invited colloquium*: Physics Dept. Brown University, USA.
March 2014 *Invited colloquium*: IACS, Harvard University, Boston, USA.
January 2014 *Invited lecture*: "XLII International Meeting on Fundamental Physics", Benasque, Spain.
January 2014 *Invited seminar*: Dept. of Physics & Astronomy Galileo Galilei, Padova, Italy.
October 2013 *Invited talk*: "II Russian-Spanish Congress", Saint Petersburg, Russia.
Sept. 2013 *Invited talk*: "Chemical evolution in the Universe: the next 30 years", Castiglione della Pescaia, Italy.
June 2013 *Invited talk*: "Cosmology and Fundamental Physics with Plank", CERN theory institute, Switzerland.
May 2013 *Invited colloquium*: STARPLAN centre, NBI, University of Copenhagen, Denmark.
April 2013 *Invited talk*: "BW 2013: Beyond the Standard Models", Vrnjacka Banja, Serbia.
April 2013 *Invited seminar*: ISCAP, Columbia University, New York, USA.
April 2013 *Invited seminar*: Astronomy Department, Columbia University, New York, USA.
April 2013 *Invited seminar*: Physics & Astronomy Dept., John Hopkins University, Baltimore, USA.
April 2013 *Invited seminar*: Joint JILA/CASA/U. of Colorado, Boulder, USA.
April 2013 *Invited seminar*: School of Earth and Space Exploration, Arizona State University, Phoenix, USA.
April 2013 *Invited seminar*: ITC, Harvard University, USA.
March 2013 *Invited review talk*: "Cosmostats", Banff, Canada.
March 2013 *Invited seminar*: Theoretical Physics Department, University of Geneva, Geneva, Switzerland.
February 2013 *Invited talk*: "Dark Energy Phenomenology", PCCP workshop, APC, Paris, France.
January 2013 *Invited talk*: Astro-particle seminar, CERN, Geneva, Switzerland.
September 2012 *Invited talk*: "Theoretical methods for non-linear cosmology", CERN, Geneva, Switzerland.
June 2012 *Invited colloquium*: SNS, Pisa, Italy.
June 2012 *Invited talk*: "What is ν ?", GGI, Florence, Italy.
May 2012 *Invited colloquium*: Physics & Astronomy Dept. Tel-Aviv University, Israel.
May 2012 *Master Class*: Physics Dept. Hebrew University, Jerusalem, Israel.
May 2012 *Invited colloquium*: Physics Dept. Hebrew University, Jerusalem, Israel.
March 2012 *Invited colloquium*: Kavli Institute for Astronomy and Astrophysics (KIAA), Beijing, China.
March 2012 *Invited colloquium*: Beijing Normal University, Beijing, China.
March 2012 *Invited colloquium*: National Astronomical Observatories, Beijing, China.
January 2012 *Invited talk*: "Inflationary Theory and Its Confrontation with Data in the Planck Era", Aspen, USA.
December 2011 *Invited chair*: "IFT inaugural conference", Madrid, Spain.
August 2011 *Invited talk*: "Particle Physics from TeV to the Planck Scale, BW2011", Serbia.
June 2011 *Invited talk*: "Statistical Challenges in Modern Astronomy V", Penn State University, USA.
May 2011 *Invited seminar*: Physics Department, University of Zurich, Switzerland.
April 2011 *Invited talk*: "The Quantum Universe", Gronningen, Holland.
Feb. 2011 *Invited talk*: "Unsolved problems in astrophysics and cosmology", Benasque Center for Physics, Spain.
Jannuary 2011 *Invited colloquium*: IAP, Paris, France.
December 2010 *Invited lectures*: "Theory for observers - Observations for theorists", Passo del Tonale, Italy.
November 2010 *Invited seminar*: MPA-Garching, Germany.
October 2010 *Invited colloquium*: ICTP, Trieste, Italy.
September 2010 *Invited colloquium*: IfA, University of Edinburgh, Edinburgh, UK.
September 2010 *Invited colloquium*: Dept. of Astronomy, Universidad Catolica de Chile, Santiago de Chile, Chile.
July 2010 *Invited talk*: "6th Patras Workshop on Axions, WIMPs and WISPs", Zurich University, Zurich, CH.
July 2010 *Invited talk*: "From planets to galaxies", Eotvos University, Budapest, Hungary.
June 2010 *Invited talk*: "European Workshop on String theory 2010", Madrid, Spain.

June 2010 *Invited talk*: “The Almost Gaussian Universe", SACLAY, Paris, France.
April 2010 *Invited seminar*: IFT/UAM, Madrid, Spain.
April 2010 *Invited seminar*: ICT, Harvard University, USA.
March 2010 *Invited seminar*: Dept. of Astronomy, Kyoto University, Japan.
March 2010 *Invited seminar*: IPMU, University of Tokyo, Japan.
December 2009 *Invited colloquium*: Benoziyo Center for Astrophysics, Weizmann Institute, Israel.
December 2009 *Invited address*: Astrophysics at the Extreme, TsviFest, Hebrew University, Israel.
November 2009 *Invited seminar*: join CTC/IoA/DAMTP, University of Cambridge, UK.
October 2009 *Invited colloquium*: Bologna Observatory, Italy.
September 2009 *Invited colloquium*: Physics Dept. University of Geneva, Switzerland.
September 2009 *Invited talk*: “Particle Cosmology”, CERN Theory Institute, Geneva, Switzerland.
July 2009 *Invited talk*: “Cosmostats”, Ascona, IT.
June 2009 *Invited talk*: “Fingerprints of the Early Universe”, Aspen, USA.
May 2009 *Invited colloquium*: ICCUB, Barcelona, Spain.
May 2009 *Invited talk*: “CosmoClusters”, Marseille, France.
April 2009: *Invited talk*: “Supernova Progenitors”, Princeton University, Princeton, USA.
March 2009: *Invited talk*: "New Horizons for Modern Cosmology: Dark Energy", IGG, Florence, Italy.
February 2009: *Invited coordinator*: "New Horizons for Modern Cosmology: Dark Matter", IGG, Florence, Italy.
November 2008: *Invited colloquium*: University of Pittsburgh, USA.
October 2008: *Invited talk*: "Spectral galaxy classification", Ringberg Castle, Germany.
October 2008: *Invited seminar*: MPA Garching, Germany.
September 2008: *Invited talk:* "Probing Stellar Populations out to the Distant Universe", Cefalu, Italy.
August 2008: *Invited talk*: "Modern Cosmology: Early Universe, CMB and LSS", Benasque, Spain.
July 2008: *Invited talk*: "Santa Fe 2008 Cosmology Workshop", Santa Fe, USA.
April 2008: *Invited talk*: CosmoTools workshop, Marseille, France.
March 2008: *Invited talk*: “Cosmic microwave background power spectrum estimation and Sunyaev-Zeldovich cluster extraction in light of point source contamination in microwave maps" workshop, SAAO Cape Town, South Africa.
March 2008: *Invited lecture*: “Multiwavelength views of the high redshift universe”, SAAO Cape Town, South Africa.
March 2008: *Invited colloquium*: Dept. of Mathematics, University of KwaZulu-Natal, Durban, South Africa.
March 2008: *Invited colloquium*: APC Paris, France.
January 2008: *Invited talk*: “Cosmology”, Aspen Center for Physics, USA.
January 2008: *Invited colloquium*: NYU Physics Department, USA.
December 2007: *Two invited lectures*: “PAU Academic Training 07”, UAM, Madrid, Spain.
November 2007: *Invited lecture*: “XIX Winter School", IAC, Canary Islands, Spain.
November 2007: *Invited Colloquium*: Institute of Space Sciences, Barcelona, Spain.
October 2007: *Invited talk*: “Decrypting the Universe”, Edinburgh, UK.
October 2007: *Invited talk*: “Star Formation Through Cosmic Time", KITP, US.
October 2007: *Invited talk*: “Supernovae: light in the darkness", Mao, Spain.
August 2007: *Invited talk*: “Star Formation, Then and Now", KITP, Santa Barbara, USA.
May 2007: *Invited colloquium.* Dept. of Astronomy & Astrophysics, Harvard University, USA.
March 2007: *Invited talk*: “Cosmology: the CMB and Large Scale Structure", Santiago, Chile.
February 2007: *Invited talk*: “Cosmology with Clusters of Galaxies”, Aspen, USA.
December 2006: *Three invited lectures on galaxy formation and evolution* at ASTROCAM, Madrid, Spain.
December 2006: *Invited talk*: “I Iberian Cosmology Meeting", Porto, Portugal.
October 2006: *Invited colloquium.* Physics Department. Columbia University, USA.
September 2006: *Invited Magistral Lecture.* Universidad Menendez Y Pelayo, Santander, Spain.
September 2006: *Invited talk*: “Identification of Dark Matter 2006”, Rhodes, Greece.
August 2006: *Invited talk*: “Benasque-2006 Cosmology”, Benasque, Spain.
July 2006:*Invited talk*: “Non-gaussianity”, SISSA, Trieste, IT.
June 2006: *Invited talk*: “From Planets to Cosmology”, Budapest, Hungary.
June 2006: *Invited talk*: “Bernard’s Cosmic Stories”, Valencia, Spain.

June 2006: *Invited lecture*: "Clusters of Galaxies", Princeton, USA.
May 2006: *Invited colloquium*: Carnegie Observatories, USA.
March 2006: *Invited colloquium*: UAM, Madrid, Spain.
March 2006: *Invited talk*: "Cosmology and Underground Lab Physics", Valencia, Spain.
January 2006: *Invited talk*: "Cosmological Probes of Baryons and Dark Matter", Aspen Center for Physics, USA.
December 2005: *Invited colloquium*: UAB, Barcelona, Spain.
November 2005: *Invited colloquium*: University of Illinois, USA.
November 2005: *Invited participation*: "Probing the Dark Universe with Subaru and Gemini", Hawaii, USA.
October 2005: *Invited colloquium*: UC Santa Barbara, USA.
October 2005: *Invited colloquium*: Carnegie Observatories, USA.
October 2005: *Invited colloquium*: Stanford University, USA.
October 2005: *Invited colloquium*: UC San Diego, USA.
October 2005: *Invited colloquium*: UC Davies, USA.
October 2005: *Invited colloquium*: UC Berkeley, USA.
October 2005: *Invited colloquium*: UC Irvine, USA.
October 2005: *Invited seminar*: Caltech, USA.
July 2005: *Invited seminar*: IoA, Cambridge, UK.
May 2005: *Invited talk*: "What is ν?", Madrid, Spain.
April 2005: *Invited seminar*: Fermilab, USA.
March 2005: *Invited seminar*: Institute for Astronomy, Edinburgh, UK.
March 2005: *Invited seminar*: University of Chicago, USA.
February 2005: *Invited talk*: "Princeton/Oxford meeting", Princeton, USA.
December 2004: *Invited talk*: "Radiative transfer and MHD in AMR", Copenhagen, Denmark.
December 2004: *Invited colloquium*: Rome Observatory, Italy.
December 2004: *Invited colloquium*: Bologna Physics Department, Italy.
December 2004: *Invited colloquium*: UCSB Physics & Astronomy Department, USA.
November 2004: *Invited seminar*: RIT Physics Department, USA.
October 2004: *Invited seminar*: Syracuse Physics Department, USA.
September 2004: *Invited lecture*: "Cosmology School in Asiago", Italy.
July 2004: *Invited talk* "The quest for cosmological scalar fields", Porto, Portugal.
December 2003: *Invited colloquium.* CIDA, Venezuela.
July 2003: *Invited talk*: "Marcel Grossman meeting", Rio de Janeiro, Brazil.
March 2003: *Invited talk*: "Cosmology", Princeton, USA.
February 2003: *Invited talk*: "CMBNET", Oxford, UK.
January 2003: *Invited talk*: "The Baryonic Universe", Aspen, USA.
July 2002: *Invited talk*: "Dark Matter small-scale problems", Chicago, USA.
July 2002: *Invited talk*: "Chemical evolution of dwarf galaxies", Ringberg Castle, Germany.
June 2002: *Invited talk*: "Cosmology and structures at high redshifts", Daejeon, South Korea.
November 2001: *Invited talk*: "DIMACS meeting on data mining methods", New Brunswick, USA.
September 2001: *Invited talk*: "Hydrodynamical Simulations of Galaxy Assembly", Madrid, Spain.
May 2001: *Invited talk*: "Chemical enrichment of Intracluster and Intergalactic Medium", Vulcano, Italy.
May 2001: *Invited talk*: "MadridLunes", Autonomous University of Madrid, Madrid, Spain.
September 2000: *Invited talk* "Biannual meeting of the Spanish Astronomical Society", Santiago de Compostela, Spain.
May 2000: *Invited talk*: "Optimal methods for extracting information from galaxy spectra", Porquerolles, France.
September 1999: *Invited talk*: "VISTA/NGST", Edinburgh, UK.
April 1999: *Invited talk*: "Spectrophotometric dating of stars and galaxies, Annapolis 99", Maryland, USA.
July 1998: *Invited talk*: "DARK98", Heidelberg, Germany.
April 1998: *Invited seminar*: IoA, University of Cambridge, Cambridge (UK).
December 1997: *Invited talk*: "Cosmology: from COBE to Galaxy Formation", Copenhagen, Denmark.
June 1997: *Invited seminar*: University of Padua, Padua, IT.
May 1997: *Invited seminar*: Durham University, Durham, UK.

March 1997: *Invited talk*: meeting of the National Academy of Science: "The Age of The Universe, Dark Matter and Structure Formation", Irvine, California, USA.
December 1996: *Invited lecture*: "From Quantum Fluctuations to Cosmological Structures", Casablanca, Morocco.
June 1996: *Invited talk*: "Astroparticle Physics", Uppsala, Sweden.
June 1995: *Invited talk*: "The Age of the Universe", Copenhagen, Denmark.

PATENTS

US patent No: 6,433,710

PUBLIC UNDERSTANDING OF SCIENCE

My research has been featured in several newspapers, among them: The Economist, The New York Times, BBC, The New Scientist, Scientific American, The Daily Telegraph, FORBES magazine, Phys.org, sciencenewstoday.org, Haaretz, El Mundo, El Pais, La Sexta, ETB. I have lectured for amateur astronomers associations both in the USA and Spain.

Invited speaker/coordinator ESOF2008.
Invited speaker "Curso de Verano El Escorial", UCM, Madrid, July 2009.
Invited talk at "The English International College", Marbella 7 May 2010, Spain.
Invited talk at "Bull - Extreme Computing", Barcelona 5 May 2010, Spain.
Invited talk at UC Casa Central, Santiago de Chile, 29 September 2010, Chile.
Invited talk at "The English International College", Marbella 5 December 2014, Spain.
Invited talk at "Planetario de Madrid", Madrid 3 December 2015, Spain.
TV appearance at "Science for the Public", WGBH, Boston 26 January 2016, USA.
Invited appearance at the "Institutio Alfons el Magnanim" public outreach act (http://www.alfonselmagnanim.net), Valencia 27 April 2017.
Invited talk at "X Jornades de Relativitat de Terrassa", Terrassa 6 May 2017, Spain.
Invited article in "Investigación y Ciencia" (Spanish language version of Scientific American), December 2017.
Invited presentation at the Tabakalera in Donostia for the research project "Spectral Exchange" (http://www.spectral.exchange), December 2018.
Invited presentation at the "Institutio Alfons el Magnanim" public outreach act (https://www.youtube.com/watch?v=pnt4-nbXgmU), Valencia, February 2020.
External consultant to the British School of Barcelona to advise year 12-13 STEM pupils (British Curriculum) on University entrance. 2017–2025.
Interview at "Quantum Photonics", clubhouse podcast. August 2025.
Public talk at "Associación Astronómica de Sabadell". November 2025.

LANGUAGES

Spanish: mother tongue
English: fluent
Italian: fluent
French: basic

SOFTWARE

I have developed the following astrophysical software packages:

PHOTO-Z TOOLS: New spectral templates and GALEX+SDSS catalog. `icc.ub.edu/~jimenez/PHOTOZ`
CMBWARP: fast cosmological parameter estimation tools. `icc.ub.edu/~jimenez/CMBwarp`
SPEED: synthetic stellar populations and stellar evolution code. `icc.ub.edu/~jimenez/SPEED`
VESPA+MOPED: physical extraction of parameters from galaxy and stellar spectra and photometry. `www-wfau.roe.ac.uk/vespa`

SCIENTIFIC ACHIEVEMENTS

The list below sumarizes the main findings about Nature I have made during my scientific career. The number in parenthesis corresponds to the article number in the publication list:

The Age of the Universe and Cosmological Parameters: The first accurate and precise constraint on the age of the Universe using globular clusters (13.5 Gyr, published in 1995); among the first indications for a cosmological constant using the ages of high-z galaxies and the ages of globular clusters (4, 7, 8, 12, 17). The first reliable and accurate estimate of the ages of high-z galaxies (6, 15, 18). The first accurate constraints on the age of Milky Way disk (20). A new method to directly measure the expansion history of the metric of space time via cosmic chronometers: the cosmic chronometer method (39, 59). I was the first one to introduce the term "tension" and quantify it regarding the mismatch at high and low-redshift of the H_0 (137, 140, 148). A demonstration of the accuracy of the cosmic chronometer method to compute cosmology parameters (158, 159, 171, 177). A new precise and accurate measurement of the age of the universe at the % level (173, 183, 187, 205, 206, 207). A method to measure H_0 from neutrino oscillations (196). A model to explain how minuscule black holes formed during inflation that produce gravitons can remove the Hubble tension (202). I have extended the age-dating technique to local and high-redshift globular clusters (212, 213).

Stellar Populations: The solution of the long standing inverse problem of deriving physical quantities from the integrated light of stellar populations via the MOPED and VESPA algorithms (34, 76). The determination of the ages, metallicities and star formation histories of galaxies from their integrated spectrum using MOPED and VESPA (53, 56, 57, 74, 86).

Stars and the Interstellar Medium: An accurate measurement of the primordial He abundance (46, 78). The first theoretical prediction that the magnetic field in molecular clouds is low (52). The discovery of the nature of Supernova type-Ia progenitors (87, 103). The role of GRBs in life survival in the universe; a lower bound to the value of the cosmological constant (155). A quantitative demonstration of the effect that giant planets can have in biasing the cosmic ladder (182).

Galaxy Formation and Evolution: Among the first parameter-free models for the formation of GCs in the LCDM paradigm (13, 153). The prediction, and later confirmation, of the existence of dark galaxies (16, 40, 178). The prediction of the existence of high-z ($z > 3$) massive elliptical galaxies (24). The observational demonstration of the existence of primordial gas at low redshift ($z \sim 3$) (64). How to perform tomography of the re-ionization epoch (69, 72, 79). A theoretical model for the formation of the first galaxies (141, 143). The theoretical discovery of how galaxies obtain their spin in the hierarchical model of structure via the cosmic web (152). The finding that there are no missing low-mass galaxies in a cosmological volume of 1 Gpc^3 (169).

Large Scale Structure: The first accurate analytical calculation of the non-gaussian mass function of collapsed structures (27). The first hints from the abundance of rare objects of primordial non-gaussian fluctuations (96). The development of analytic methods to compute the large scale structure of the universe (104, 115, 138,144). The development of accurate and exact tools to analyze weak lensing cosmological studies (154, 157, 166). A method to measure in a cosmology-model independent way the standard ruler of the Universe (162).

Neutrino Cosmology: The measurement of neutrino masses and their hierarchy from cosmology (97, 127, 161, 163, 165). A new method to distinguish Dirac from Majorana neutrinos using astronomical observations (197, 207) and new predictions on the shape of neutrino profiles (209). I have also made the first accurate predictions on how the cross-correlatiosn of the cosmic neutrino background look like (215). I have also developed a novel method to measure the cosmic neutrino background using celestial objects (217).

Dark Energy Theory: A dynamical origin to explain the nature of dark energy as a source of momentum exchange with neutrinos (168, 184). Some of the strongest constraints on modifications of gravity, putting these theories under pressure (142, 151, 156, 159, 163, 175, 185).

Dark Matter: The first precise computation of annihilation and profile spikeness of dark matter halo profiles (38). A method to detect the existence of axions from astronomical observations (117, 126). A quantitative demonstration that the existence of dwarf galaxies without dark matter implies that dark matter can only be cold CDM (183).

Early Universe and Theoretical Cosmology (The Quantum Nature of the Universe): An inflation model from pure (super-)symmetry considerations (101,110, 125). The best model independent constraint on the amount of different types of energy densities in the early Universe: no room for early dark energy (164). A method to measure deviations from Einstein gravity at the Planck scale using non-gaussian observations of the CMB (170). A new method to test the early Universe via measurements of the graviton exchange during inflation using the non-gaussian halo power–spectrum (172). A new method to measure the Homogeneity of the Universe for any general metric and independently on the cosmological model: a way to see inside the past light-cone (174). A method to constraint the global curvature of the Universe independent of the cosmology model (167). A new approach based entirely on quantum mechanics to describe the early Universe, including a robust prediction that the tensor-to-scalar ratio must be 0.01 (176, 179, 180). A model independent method to describe quasi de Sitter as a pure non-perturbative quantum gravity phenomenon on exact de Sitter as a result of the quantum phases as described by the quantum Fisher (185, 186, 188, 189, 190, 192, 195). A new insight of why the Universe is exactly spacially flat (201). I have also developed a new picture to observationally test the quantum nature of the Universe (216,224) and a new theory in which the scalar perturbations of the Universe is generated from quantum fluctuations of space-time (211,220).

Statistics and Inference: The invention of the data compression algorithm MOPED(28) and VESPA(79) . The development of rigorous statistical methods to analyse astronomical observations and reduce the effect of systematic errors (120). A new parameterization of the cosmic microwave background that opened the door to fast cosmological parameter estimation (43). A theoretical method to better design CMB polarization experiments (63).

Holography, Gravitational Waves and the Early Universe: I have developed a new approach to study singularities and strongly coupled field theories to understand also phase transitions in the early Universe as well as the state of matter in neutron stars collisions (208).

Computational methods: I have developed new algorithms in the field of machine learning to solve differential equations (PINNs). In particular, I have found new schemes to facilitate the search for solutions in NN with ultra-complex morphology that contains multiple maxima/minima and inflection points. This has wide ranging applications in the field of ML (213). I have published a textbook on the subject (4, 5).

AI, Robotization and Society: I have written two books on the impact of robotization and AI on society and democracy as well as numerous articles (246-278) on the same subject.

Complexity: I have developed new methods to understand complexity, In particular how to characterized the solution space of non-linear PDEs. This is done in the context of both astrophysical phenomena, game theory and language models. In particular: a new method to analyze and classify the solutions of highly complex PDEs like Navier-Stokes (229) or stochastic partial differential equations (230).

PUBLICATIONS

There are 60 articles with more than 100 citations (marked with ***). Note that for many papers the author list is alphabetical.

Books

1. "Democracias Robotizadas". Luis Moreno & Raul Jimenez. Ediciones La Catarata (www.catarata.org), May 2018. ISBN: 978-8490974735. Published in Spanish, English and Italian (www.aracneeditrice.it). All versions available in www.amazon.com.

2. "Behind Closed Doors. Reflections in Pandemic Times (2019-2021)". Luis Moreno & Raul Jimenez. May 2021. ISBN: 979-8509871566. Published in Spanish and English. All versions available in www.amazon.com.

3. "The Sociology of Cosmology". Rabih Zbib & Raul Jimenez. October 2025. World Scientific Publishing.

4. "Solving PDEs and Inverse Problems With AI - With Problems and Solutions Part I". Pavlos Protopapas & Raul Jimenez. October 2025. World Scientific Publishing.

5. "Solving PDEs and Inverse Problems With AI - With Problems and Solutions Part II". Pavlos Protopapas & Raul Jimenez. October 2025. World Scientific Publishing.

In refereed journals

6. "Detecting red stellar companions to hot sub-dwarfs with CCD imaging". Peter Thejll, Armin Theissen & Raul Jimenez. *Astronomy & Astrophysics.* **292**, 457-462, 1994.

7. "On globular clusters, mass loss, stellar evolution and the age of the Universe", Raul Jimenez. PhD Thesis. University of Copenhagen, 1995.

8. "Stellar evolution with mass loss – comparison of numerical and semi-analytical computations". Raul Jimenez, Uffe G. Jørgensen, Peter Thejll & James MacDonald. *Monthly Notices of the Royal Astronomical Society.* **275**, 1245-1248, 1995.

9. *** "A 3.5-Gyr-old galaxy at redshift 1.55". James S. Dunlop, John A. Peacock, Hyron Spinrad, Arjun Dey, Raul Jimenez, Daniel Stern & Roger A. Windhorst. *Nature.* **381**, 581-584, 1996.

10. "A new self-consistency check on the ages of globular clusters". Raul Jimenez & Paolo Padoan. *Astrophysical Journal Letters.* **463**, L17-L20, 1996.

11. ***"Ages of globular clusters; a new approach". Raul Jimenez, Peter Thejll, Uffe Jørgensen, James MacDonald & Bernard Pagel. *Monthly Notices of the Royal Astronomical Society.* **282**, 926-942, 1996.

12. "Stellar evolutionary tracks for low mass stars". Raul Jimenez & James MacDonald. *Monthly Notices of the Royal Astronomical Society.* **283**, 721-732, 1996.

13. "Modified Cold Dark-Matter models in light of 53W091, an old galaxy at high z". Alexander Kashlinsky & Raul Jimenez. *Astrophysical Journal Letters.* **474**, L81-L84, 1997.

14. "Clusters 1 and 3 in the Fornax dwarf galaxy". Uffe G. Jørgensen & Raul Jimenez. *Astronomy & Astrophysics.* **317**, 54-64, 1997.

15. *** "Ages of globular clusters: breaking the age-distance degeneracy with the luminosity function". Paolo Padoan & Raul Jimenez. *Astrophysical Journal.* **475**, 580-583, 1997.

16. "On star formation in primordial protoglobular clouds". Paolo Padoan, Raul Jimenez & Bernard Jones. *Monthly Notices of the Royal Astronomical Society.* **285**, 711-717, 1997.

17. "Are low surface brightness discs young?". Paolo Padoan, Raul Jimenez & Vincenzo Antonuccio-Delogu. *Astrophysical Journal Letters.* **481**, L27-L30, 1997.

18. *** "LBDS 53W091: An old, red galaxy at $z = 1.552$". Hyron Spinrad, Arjun Dey, Daniel Stern, James Dunlop, John Peacock, Raul Jimenez & Rogier Windhorst. *Astrophysical Journal.* **484**, 581-601, 1997.

19. "Dark galaxies, spin bias and gravitational lenses". Raul Jimenez, Alan Heavens, Mike Hawkins & Paolo Padoan. *Monthly Notices of the Royal Astronomical Society.* **292**, L5-L10, 1997.

20. "The ages and distances of globular clusters with the luminosity function method: the Case of M5 and M55". Raul Jimenez & Paolo Padoan. *Astrophysical Journal.* **498**, 704-709, 1998.

21. "Old high-redshift galaxies and primordial density fluctuation spectra". John Peacock, Raul Jimenez, James Dunlop, Ian Waddington, Hyron Spinrad, Daniel Stevens, Arjun Dey & Rogier Windhorst. *Monthly Notices of the Royal Astronomical Society.* **296**, 1089-1097, 1998.

22. ***"Galaxy formation and evolution: low surface brightness galaxies", Raul Jimenez, Paolo Padoan, Francesca Matteucci & Alan Heavens. *Monthly Notices of the Royal Astronomical Society.* **299**, 123, 1998.

23. "Hipparcos and the age of the galactic disc". Raul Jimenez, Chris Flynn & Eira Kotoneva. *Monthly Notices of the Royal Astronomical Society.* **299**, 515-519, 1998.

24. "Galaxy evolution, deep galaxy counts and the near-IR cosmic infrared background". Raul Jimenez & Alexander Kashlinsky. *Astrophysical Journal.* **511**, 16-33, 1999.

25. "On the origin of damped Lyman-alpha systems: a case for LSB galaxies?". Raul Jimenez, David Bowen & Francesca Matteucci. *Astrophysical Journal Letters.* **514**, 83-86, 1999.

26. "The role of star formation in the Tully-Fisher law". Alan Heavens & Raul Jimenez. *Monthly Notices of the Royal Astronomical Society.* **305**, 770-774, 1999.

27. "Premature dismissal of high redshift elliptical galaxies". Raul Jimenez, Amancio Friaca, James Dunlop, Roberto Terlevich, John Peacock & Louisa Nolan. *Monthly Notices of the Royal Astronomical Society.* **305**, L16-L20, 1999.

28. "Overmerging and M/L ratios in phenomenological galaxy formation models". Eelco van Kampen, Raul Jimenez & John Peacock. *Monthly Notices of the Royal Astronomical Society.* **310**, 43-56, 1999.

29. "Proto–galactic starbursts at high redshift". Raul Jimenez, Paolo Padoan, James S. Dunlop, David V. Bowen, Mika Juvela & Francesca Matteucci. *Astrophysical Journal.* **532**, 152-169, 2000.

30. ***"The abundance of high-redshift objects as a probe of non–Gaussian initial conditions". Sabino Matarrese, Licia Verde & Raul Jimenez. *Astrophysical Journal.* **541**, 10-24, 2000.

31. ***"Massive lossless data compression and multiple parameter estimation from galaxy spectra". Alan Heavens, Raul Jimenez & Ofer Lahav. *Monthly Notices of the Royal Astronomical Society.* **317**, 965-972, 2000.

32. "Where are the absorbers towards Q2302+029?". David Bowen, Raul Jimenez & Max Pettini. *Astrophysical Journal.* **547**, 39-49, 2001.

33. "Galactosynthesis: halo histories, star formation, and disks". Ari Buchalter, Raul Jimenez & Marc Kamionkowski. *Monthly Notices of the Royal Astronomical Society.* **322**, 43-66, 2001.

34. "The Sun, stellar-population models, and the age estimation of high-redshift galaxies". Louisa Nolan, James Dunlop & Raul Jimenez. *Monthly Notices of the Royal Astronomical Society.* **323**, 385-390, 2001.

35. ***"The ages of quasar host galaxies". Louisa Nolan, James Dunlop, Marek Kukula, Dave Hughes, Todd Boroson & Raul Jimenez. *Monthly Notices of the Royal Astronomical Society.* **323**, 308-330, 2001.

36. ***"Tests for primordial non–Gaussianity". Licia Verde, Raul Jimenez, Marc Kamionkowski & Sabino Matarrese. *Monthly Notices of the Royal Astronomical Society.* **325**, 412-418, 2001.

37. ***"Recovering physical parameters from galaxy spectra using MOPED". Christian Reichardt, Raul Jimenez & Alan F. Heavens. *Monthly Notices of the Royal Astronomical Society.* **327**, 849-867, 2001.

38. "The origin of blue cores in Hubble Deep Fields E/S0 galaxies". Felipe Menanteau, Raul Jimenez & Francesca Matteucci. *Astrophysical Journal Letters.* **562**, L23-L27, 2001.

39. "Energetics of gamma-ray bursts". Raul Jimenez, David Band & Tsvi Piran. *Astrophysical Journal.* **561**, 171-177, 2001.

40. "Galactosynthesis at high–redshift". Ari Buchalter, Raul Jimenez & Marc Kamionkowski. *Monthly Notices of the Royal Astronomical Society.* **328**, 520-526, 2001.

41. ***"Dark matter spikes and annihilation from the galactic center". David Merritt, Milos Milosavljevic, Licia Verde & Raul Jimenez. *Physical Review Letters.* **88**, 191301, 2002.

42. ***"Constraining cosmological parameters based on relative galaxy ages". Raul Jimenez & Abraham Loeb. *Astrophysical Journal.* **573**, 37-42, 2002.

43. "The abundance of dark galaxies". Licia Verde, Siang–Peng Oh & Raul Jimenez. *Monthly Notices of the Royal Astronomical Society.* **336**, 541, 2002.

44. "Coupled spheroid and black–hole formation, and the multifrequency detectability of AGN and sub-mm sources". Elese Archibald, James S. Dunlop, Raul Jimenez, Amancio Friaca, Ross J. McLure & David H. Hughes. *Monthly Notices of the Royal Astronomical Society.* **336**, 353, 2002.

45. "Luminosity–metallicity relation for the lower main–sequence". Eira Kotoneva, Chris Flynn & Raul Jimenez. *Monthly Notices of the Royal Astronomical Society.* **335**, 1147-1159, 2002.

46. ***"Efficient cosmological parameter estimation from microwave background anisotropies". Arthur Kosowsky, Milos Milosavljevic & Raul Jimenez. *Physical Review D.* **66**, 063007, 2002.

47. "Old elliptical galaxies at z$\sim$ 1.5 and the Kormendy relation". I. Waddington, R. A. Windhorst, S. H. Cohen, J. S. Dunlop, J. A. Peacock, Raul Jimenez, R. J. McLure, A. J. Bunker, H. Spinrad, A. Dey & D. Stern. *Monthly Notices of the Royal Astronomical Society.* **336**, 1342, 2002.

48. ***"Dark halo properties from rotation curves". Raul Jimenez, Licia Verde & Siang–Peng Oh. *Monthly Notices of the Royal Astronomical Society.* **339**, 243, 2003.

49. ***"The cosmic production of helium". Raul Jimenez, Chris Flynn, James MacDonald & Brad K. Gibson. *Science.* **299**, 1552, 2003.

50. "F stars, metallicity and the ages of red galaxies at $z > 1$". Louisa A. Nolan, James S. Dunlop, Raul Jimenez & Alan F. Heavens. *Monthly Notices of the Royal Astronomical Society.* **341**, 464, 2003.

51. "Photoelectric heating and [CII] cooling in translucent clouds: results for cloud models based on simulations of compressible MHD turbulence". Mika Juvela, Paolo Padoan, Raul Jimenez. *Astrophysical Journal.* **591**, 258, 2003.

52. ***"Constraints on the equation of state of dark energy and the Hubble constant from stellar ages and the cosmic microwave background". Raul Jimenez, Licia Verde, Tommaso Treu & Dan Stern. *Astrophysical Journal.* **593**, 622, 2003.

53. ***"Star formation and metallicity history of the SDSS galaxy survey: unlocking the fossil record". Benjamin Panter, Alan F. Heavens & Raul Jimenez. *Monthly Notices of the Royal Astronomical Society.* **343**, 1145, 2003.

54. ***"Synthetic stellar populations: single stellar populations, stellar interior models and primordial proto-galaxies". Raul Jimenez, James MacDonald, James Dunlop, Paolo Padoan & John Peacock. *Monthly Notices of the Royal Astronomical Society.* **349**, 240, 2004.

55. ***"The average magnetic field in molecular clouds: new evidence of super-alfvenic turbulence". Paolo Padoan, Raul Jimenez, Mika Juvela & Åke Nordlund. *Astrophysical Journal Letters.* **604**, 49, 2004.

56. *** "The star-formation history of the Universe from the stellar populations of nearby galaxies". Alan Heavens, Benjamin Panter, Raul Jimenez & James Dunlop. *Nature.* **428**, 625, 2004.

57. "Structure functions scaling in compressible super-alfvenic MHD turbulence". Paolo Padoan, Raul Jimenez, Åke Nordlund & Stanislav Boldyrev. *Physical Review Letters.* **92**, 191102, 2004.

58. "Fast cosmological parameter estimation from microwave background temperature and polarization power spectra". Raul Jimenez, Licia Verde, Hiranya Peiris & Arthur Kosowsky. *Physical Review D.* **70**, 023005, 2004.

59. ***"The mass function of the stellar component of galaxies in the Sloan Digital Sky Survey". Ben Panter, Alan F. Heavens & Raul Jimenez. *Monthly Notices of the Royal Astronomical Society.* **355**, 764, 2004.

60. "Baryonic Conversion Tree: the global assembly of stars and dark matter in galaxies from the SDSS". Raul Jimenez, Benjamin Panter, Alan Heavens & Licia Verde. *Monthly Notices of the Royal Astronomical Society.* **356**, 495, 2005.

61. "Limits on deviations from the inverse-square law on megaparsec scales". Carolyn Sealfon, Licia Verde & Raul Jimenez. *Physical Review D.* **71**, 083004, 2005.

62. ***"Constraints on the redshift dependence of the dark energy potential". Joan Simon, Licia Verde, Raul Jimenez. *Physical Review D.* **71**, 123001, 2005.

63. "Fast identification of transits from light curves". Pavlos Protopapas, Raul Jimenez & Charles Alcock. *Monthly Notices of the Royal Astronomical Society.* **362**, 460, 2005.

64. ***"The SCUBA Half-Degree Extragalactic Survey - I. Survey motivation, design and data processing". Mortier et al. *Monthly Notices of the Royal Astronomical Society.* **363**, 563, 2005.

65. "Smoothing spline primordial power spectrum reconstruction". Carolyn Sealfon, Licia Verde & Raul Jimenez. *Physical Review D.* **72**, 103520, 2005.

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