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EDUCATION

- 2000 **PhD Astronomy**, University of Cantabria, Santander, Spain
PhD thesis, *Data analysis techniques for CMB and the Sunyaev-Zel'dovich effect*
1996 **BSc, Physics**, University of Cantabria, Santander, Spain

POST-DOCS AND FELLOWSHIPS

- 2004-2005 **Massachusetts Institute of Technology (MIT), MA, USA**, Prof. Max Tegmark's group
2003-2004 **University of Pennsylvania, PA, USA**, Prof. Max Tegmark's group
2001-2003 **University of Oxford, UK**, Marie Curie European Fellowship, Prof. Joseph Silk's group

PROFESSIONAL EXPERIENCE

- 2010-present **Director of the [Observatorio Astronómico de Cantabria \(OAC\)](#)**, Outreach facility of the Regional Government of Cantabria, Spain.
2009-present **Permanent Staff CSIC Researcher (Tenure)**, Consejo Superior de Investigaciones Científicas (CSIC), Spain, [Instituto de Física de Cantabria](#), Santander, Spain
2005-2009 **Researcher, Ramón y Cajal Contract (Tenure-Track)**, Consejo Superior de Investigaciones Científicas (CSIC), Spain, [Instituto de Física de Cantabria](#), Santander, Spain

RESEARCH INTERESTS

Cosmology and galaxy clusters from a multiwavelength perspective (*Sunyaev-Zel'dovich, X-ray and lensing*). Analysis of Planck data (*I'm a Planck scientist and a LFI core team member*)

PhD THESIS ADVISOR

- 2007-2011 Pier Paolo Ponente received his PhD with the maximum score. He published three papers as the main author on topics related to free-free radiation from the early universe, the radio background, and gravitational lensing,

UNIVERSITY CLASS TEACHING EXPERIENCE (*Responsible for creating and teaching some classes in these programs*)

- 1999 **General Relativity**, University of Cantabria (UC), Santander, Spain
2005-2010 **PhD Cosmology Program**, University of Cantabria, Santander, Spain
2007-2010 **Master Programs**, UC Physics and UC Physical Technologies & Computation, Santander, Spain

STUDENT SUPERVISION

- 2002 Supervised PhD student's research (*Veronika Sliwa*) during his visit to the University of Oxford, UK
2011 Supervised and directed the research project of a student (*Ilargi Zaballa*) during the last year of her degree at University of Cantabria

CONFERENCE ORGANIZATION (*Santander, Spain*)

- 2013 **EPI2013, Exploring the Physics of Inflation**, Member of LOC
2011 **SZ2011, Sunyaev-Zel'dovich 2011**, Conference Organizer, LOC Chair, Member of LOC & SOC
2008 **SEA2008, Ann. Mtg. of the Spanish Astronomy. Soc.**, 2008, Member of LOC, Proceedings Editor
2007 **DAC2007, Data Analysis in Cosmology, 2007**, Member of LOC

BOOKS/EDITOR

Co-editor, *Highlights of Spanish Astrophysics V: Astrophysics and Space Science Proceedings*
ISBN 978-3-642-11249-2. Springer-Verlag Berlin Heidelberg, 2010 (*Proceedings of the SEA2008 conference*)
Referee in astronomy journals; *Astronomy and Astrophysics*, *Monthly Notices of the Royal Astronomical Society*.

PRESENT PARTICIPATION IN LARGE COLLABORATIONS

Planck Scientist / LFI Core Team member, The Planck Mission

(<http://www.rssd.esa.int/index.php?project=Planck>), is a satellite that surveys the entire sky at 9 frequencies between 30 GHz and 857 GHz. In my position, I have direct access to the latest calibrated data and participate in the scientific exploitation of the data (*particularly in the galaxy cluster group*). Lead some subprojects in galaxy cluster science within the Planck collaboration.

In charge of the Simulation Group and a Member of J-PAS (<http://j-pas.org/>) an international collaboration that is building a telescope to make deep observations of the sky over 8000 square degrees and with more than 56 bands. The wide sky coverage combined with the large number of bands will allow the determination of photometric redshifts with unprecedented precision, and to study the BAO in greater detail. In this collaboration, I am mostly involved in the creation of the large N-body simulations and the synergies that emerge when combining J-PAS data and Planck data.

GRANTS AND AWARDS (*Most recent and relevant*)

1996-2000 **FPI Grant (PhD)**, Funded by the Ministry of Education (Spain)

2001-2003 **Marie Curie Fellowship (postdoc)**, Funded by the European Union (*Oxford University*)

2006 **Title:** Cosmology from a joint Planck-SALT galaxy cluster in southern sky (**PI: Jose M. Diego**)
Funded by: Spanish and South African governments
Duration: 2 years
Amount: 16,000 EUR (*Spanish side, a similar amount was granted to the SA group*)

2006 **Title:** Multifrequency study of galaxy clusters, (**PI: Jose M. Diego**)
Funded by: Spanish government
Duration: 1 year
Amount: 10,000 EUR

2010 **Title:** Exploring the physics of inflation (EPI)
Funded by: Spanish government
Duration: 5 years
Amount: 4 Million EUR

2007 **Title:** CMB, science with the Planck satellite and development of new polarization experiments
Funded by: Spanish government
Duration: 3 years
Amount: 510,620 EUR

SELECTED PUBLICATIONS (**Total:** 54 peer review prestigious international journals, 1300+citations, H factor of 22 (as of Sept. 2012). The full publication list including proceedings can be found on [my IFCA webpage](http://www.ifca.unican.es/en/node/457) <http://www.ifca.unican.es/en/node/457>).

REFEREED ARTICLES AS FIRST AUTHOR

An anomalous Wilkinson Microwave Anisotropy Probe signal in the ecliptic plane,
Diego et al. 2010, MNRAS, 402, 1213

The Sunyaev-Zel'dovich effect in Wilkinson Microwave Anisotropy Probe data,
Diego & Patridge 2010, MNRAS, 402, 1179

Looking for the Sunyaev-Zel'dovich effect in the Virgo cluster from WMAP and ROSAT data,
Diego & Ascasibar 2008, MNRAS, 389, 1805

Observing high-redshift galaxy clusters through lensing of the Ostriker-Vishniac effect,
Diego & Herranz 2008, MNRAS, 383, 791

Combined reconstruction of weak and strong lensing data with WSLAP,
Diego et al. 2007, MNRAS, 375, 958

Non-parametric mass reconstruction of A1689 from strong lensing data with the Strong Lensing Analysis Package (SLAP), Diego et al. 2005, MNRAS, 362, 1247

Non-parametric inversion of strong lensing systems,

Diego et al. 2005, MNRAS, 360, 477

The hybrid SZ power spectrum: combining cluster counts and SZ fluctuations to probe gas physics,

Diego & Majumdar, 2004, MNRAS, 352, 993

The Sunyaev-Zel'dovich effect contribution to WMAP: a cross-correlation between WMAP and ROSAT,

Diego, Silk & Sliwa, 2003, MNRAS, 346, 940

Kinetic Sunyaev-Zel'dovich Effect and Cosmic Microwave Background Polarization from Subsonic Bulk Motions of Dense Gas Clouds in Galaxy Cluster Cores,

Diego, Mazzotta & Silk. 2003, ApJ, 597, 1

Cosmological constraints from the cluster contribution to the power spectrum of the soft X-ray background. New evidence for a low σ_8 ? Diego et al. 2003, MNRAS, 344, 951

Morphological redshift estimates for galaxy clusters in a Sunyaev-Zel'dovich effect survey,

Diego et al. 2003, MNRAS, 341, 599

The impact of relativistic corrections and component separation in the measurement of the Sunyaev-Zel'dovich effect and on the small angular scale non-Gaussianity of the cosmic microwave background,

Diego et al. 2003, MNRAS, 338, 796

A Bayesian non-parametric method to detect clusters in Planck data,

Diego et al. 2002, MNRAS, 336, 1351

The Sunyaev-Zel'dovich effect as a cosmological discriminator,

Diego et al. 2002, MNRAS, 331, 556

Constraining our Universe with X-ray and optical cluster data,

Diego et al. 2001, MNRAS, 325, 1533

Partition function based analysis of cosmic microwave background maps,

Diego et al. 1999, MNRAS, 306, 427

OTHER SIGNIFICANT REFEREED ARTICLES (*Most recent and relevant*)

Planck Intermediate Results: VIII. Filaments between interacting clusters (*Co-lead this paper*)

Planck Collaboration: 2012 submitted, arXiv1208.5911

Planck Intermediate Results: X. Physics of the hot gas in the Coma cluster

Planck Collaboration. 2012 submitted, arXiv1208.3611

Planck Intermediate Results: V. Pressure profiles of galaxy clusters from the Sunyaev-Zeldovich effect

Planck Collaboration. 2012 submitted, arXiv1207.4061

Planck Intermediate Results: III. The relation between galaxy cluster mass and Sunyaev-Zeldovich signal

Planck Collaboration. 2012 submitted, arXiv1204.2743

Planck Early Results: VIII. The all-sky early Sunyaev-Zeldovich cluster sample

Planck Collaboration. 2011, A&A, 536, 8P

Planck Early Results: VII. The Early Release Compact Source Catalogue

Planck Collaboration. 2011, A&A, 536, 7P

Planck Early Results: X. Statistical analysis of Sunyaev-Zeldovich scaling relations for X-ray galaxy clusters,

Planck Collaboration. 2011, A&A, 536, 10P

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. 2011, A&A, 536, 26P

Isotropic wavelets: a powerful tool to extract point sources from cosmic microwave background maps

Cayón, L.; Sanz, J.L.; Barreiro, R.B.; Martínez-González, E.; Vielva, P.; Toffolatti, L.; Silk, J.; **Diego, J. M.**; Argüeso, F. 2000, MNRAS, 315, 757

Filtering techniques for the detection of Sunyaev-Zel'dovich clusters in multifrequency maps

Herranz, D.; Sanz, J.L.; Hobson, M. P.; Barreiro, R. B.; **Diego, J. M.**; Martínez-González, E.; Lasenby, A. N., 2002, MNRAS, 336, 1057

The CMB cold spot: texture, cluster or void?

Cruz, M.; Martínez-González, E.; Vielva, P.; **Diego, J.M.**; Hobson, M.; Turok, N. 2008, MNRAS, 390, 913

The case for non-Gaussianity on cluster scales

Mathis, H.; **Diego, J.M.**; Silk, J. 2004, MNRAS, 353, 681

On the formation of cold fronts in massive mergers

Mathis, H.; Lavaux, G.; **Diego, J.M.**; Silk, J. 2005, MNRAS, 357, 801

SELECTED PRESENTATIONS AT CONFERENCES (*Most recent and relevant*)

(*Total: 20 talks - international meetings and conferences*)

- 2012 **Planck's view of Galaxy Clusters**, IAU Meeting in Beijing
- 2012 **SZ effect in WMAP data**, Rencontres de Moriond, Italy
- 2011 **Large Scale Structure: A Microwave Vision** (*Invited talk*), IXO Meeting in Rome
- 2006 **Mass reconstruction from combined weak and strong lensing data**, Rencontres de Moriond, Italy
- 2004 **Mass reconstruction with Lensing** (*Invited talk*), Data Analysis in Cosmology, Summer school, Valencia, Spain
- 2003 **SZ from cross-correlating WMAP and ROSAT**, NAM2003 Meeting in Dublin
- 2003 **Cosmology with Planck SZ catalog** (*Invited talk*), SZ meeting in Chicago
- 2001 **Cosmological constraints from galaxy clusters**, Mining the Sky meeting in Garching

SELECTED OUTREACH TALKS (*All invited talks*)

- 2012 Scientific Coffee in the Cafe de las Artes, *Santander, Spain*
SUBJECT: *The Edge of the Universe* followed by a long debate with questions from the audience.
- 2012 Opening talk to commemorate the 30th anniversary of the [Agrupación Astronómica Cántabria](#) in the Cultural Center, Doctor Madrazo, *Santander, Spain*
SUBJECT: *A Very Weird Universe*
- 2011 At the [Rencontres Transfrontalières d'Astronomes Amateurs](#), *Hendaye, France*
SUBJECT: *The Edge of the Universe.*
- 2011 Opening talk for the *Cosmos Origin's (Science Marathon)* Program, National Museum of Science and Technology, *Madrid, Spain*
SUBJECT: *Cosmic microwave background and the size of the universe.*
- 2009 For the astronomy summer course, *Curso Práctico de Astronomía: Midiendo el Universo*, organized by the University of Cantabria, *Valderredible, Spain*
SUBJECT: *Galaxy clusters*
- 2006 Opening talk on *XVII Spanish National Meeting of Amateur Astronomers, Santander, Spain.*
SUBJECT: The topic of the talk was *The Largest Known Objects in the Universe: Galaxy Clusters*