

CURRICULUM VITAE ABREVIADO (CVA)

Fecha del CVA: 23 Abril 2023

Part A. DATOS PERSONALES

Nombre	Jose Maria		
Apellidos	Diego Rodriguez		
Sexo (*)	Hombre	Fecha Nacimiento	10/03/1973
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Open Researcher and Contributor ID (ORCID) (*)	0000-0001-9065-3926		

(*) Mandatory

A.1. Situación profesional actual

Puesto	Investigador Científico		
Fecha inicio	2018		
Institución	Instituto de Fisica de Cantabria (CSIC-UC)		
Departamento	Astronomía		
País	España	Telefono	942201452
Palabras clave	Dark Matter, Gravitational Lensing, Clusters of Galaxies, Cosmology		

A.2. Situación profesional anterior

Periodo	Puesto
2009-2018	Científico Titular CSIC, IFCA
2005-2009	Investigador Ramon y Cajal CSIC, IFCA
2004-2005	Postdoc, MIT, USA
2003-2004	Postdoc, Upenn, USA
2000-2003	Postdoc Marie-Curie, Oxford, UK

A.3. Formación Académica

PhD, Licensed, Graduate	University/Country	Year
PhD degree	Universidad de Cantabria	2000
Physics degree	Universidad de Cantabria	1996

Part B. CV SUMMARY

Jose M. Diego obtained his PhD in 2000 at the University of Cantabria. Soon after he obtained a Marie Curie fellowship to work in the astrophysics department of the University of Oxford, UK, where he worked with Prof. Joseph Silk. In 2003 he moved to UPenn, USA to work with Prof. Max Tegmark. In 2004 he moved to MIT, USA for a third postdoctoral contract. In 2005 he obtained Ramon y Cajal contract at the instituto de Fisica de Cantabria, Spain. He obtained a CSIC Científico Titular position on 2009, and promoted to Científico Titular (CSIC) in 2018.

At present, he works mostly on dark matter (astrophysical evidence). In the past he has worked on Cosmology and galaxy clusters from a multiwavelength perspective (*lensing, Sunyaev-Zel'dovich, X-ray*). Gravitational lensing. Gravitational Waves. He was a Planck Scientist in ESA's Planck mission. Among current projects, he coordinates the galaxy clusters and lensing working group in J-PAS survey and the Weak Lensing Selected Galaxy Clusters in the Euclid collaboration. He is also part of the core team of the ESA mission ARRAKIHS, the first space mission lead by Spain and that will study nearby galaxies to unprecedented depth, with the goal of constraining dark matter models through their substructures and morphology of tidal tails (in those that are interacting). He is world-recognized leader in the field of microlensing near cluster caustics as a probe of compact dark matter, where he made pioneering work. He has also pioneered the work of microlensing of

gravitational waves by realistic stellar distributions, and is currently exploring ways to use this technique to constrain models of dark matter, such as primordial black holes.

He has received multiple awards. In 2002 he received a **Marie Curie fellowship**. In 2018 he received the **Gruber Cosmology Prize**. Awarded to the Planck Team. In 2018 he received the **Group Achievement award of the RAS**. Also awarded to the Planck Team. In 2019 he received the **Giuseppe and Vanna Cocconi Prize of the EPS**. Awarded to the WMAP and Planck collaborations.

He has directed two PhD theses: 2011 Pier Paolo Ponente, 2021, Alberto Manjón, and is currently directing two more (Pratibha Jangra and Jose M. Palencia). He has directed two Master Thesis from University International of Valencia (2015 Jose M. Dana and 2019 Jorge Balsa) and several research projects from undergrad students in their last year.

During 2010 and 2013 he served as Director of the Observatorio Astronómico de Cantabria (public service). He is a regular evaluator of projects of the Plan Nacional for the Ministerio de Ciencia e Innovación through ANEP and the AEI (Member of the *Comisión Técnica* in 2021, 2002). He has participated in Panels for permanent staff positions (CSIC) and as a panelist in the *Juan de la Cierva* program. He has been an external referee in projects from the National Science Centre (Poland), and Natural Science Foundation (China). He is a frequent reviewer for multiple astronomy journals; *ApJ*, *A&A*, *MNRAS*, *PhRevD*. Since 2020, he is an editor in the magazine from the Sociedad Española de Astronomía (2 issues per year). Editor of ***Highlights of Spanish Astrophysics V: Astrophysics and Space Science Proceedings 2010*** (*Proceedings of the SEA2008 conference*).

He has been the main organizer of multiple conferences: CosmoCruise2019 (Venice, 2019), DarkMatter 2018 (2018, Santander), Clusters2017 (2017, Santander), DarkMatter 2016 (2016, Santander), CosmoCruise2015 (Barcelona, 2015), SZ2011 (2011, Santander) and participated in the organization of a similar number.

He has released codes (available on request) that are being used by the community. These include the lensing reconstruction code, *WSLAP+*, and the visualization tool, *LensExplorer*.

Part C. Most Relevant Contributions

I have more than **270 peer review** articles in prestigious international journals, with **over 67,000 citations**. My **H factor is 96**. Among these I have **36 articles as a first author** totalling more than 1100 citations. Below I highlight the most relevant

C.1: Ten Most Relevant Publications

- [**JWST's PEARLS: A new lens model for ACT-CL J0102-4915, "El Gordo," and the first red supergiant star at cosmological distances discovered by JWST.**](#) **Diego, J.M.** Meena, A.K., Adams, N.J. et al. 2023, *A&A*, 672, 3.
- [**Godzilla, a monster lurks in the Sunburst galaxy.**](#) **Diego, J.M.**, Pascale, M., Frye, B., et al. . 2022, *A&A*, 665, 134
- [**Constraining the abundance of primordial black holes with gravitational lensing of gravitational waves at LIGO**](#) **J.M. Diego**. 2020, *Phys. Rev. D*. 2020, 101, 3512
- [**Observational signatures of microlensing in gravitational waves at LIGO/Virgo frequencies**](#) **J.M. Diego**, Hannuksela, O.A. Kelly, P., et al. 2019, *A&A*, 627, 130
- [**The Universe at extreme magnification.**](#) **J.M. Diego** 2019, *A&A*, 625, 84
- [**Dark matter under the microscope: Constraining compact dark matter with caustic crossing events.**](#) **J.M. Diego**, Kaiser, N., Broadhurst, T., et al. 2018, *ApJ*, 857, 25.

- [A highly magnified star at redshift 6.2](#). Welch, B., Coe, D. **Diego, J.M.**, et al. 2022, *Nature*, **613**, 815.
- [Extreme magnification of an individual star at redshift 1.5 by a galaxy-cluster lens](#) Kelly, P.L., **Diego, J.M.**, Rodney, S., Kaiser, N., et al. 2018, *Nature Astronomy*, **2**, 334
- [A free-form prediction for the reappearance of supernova Refsdal in the Hubble Frontier Fields cluster MACSJ1149.5+2223](#). **Diego, J.M.**, Broadhurst, T., Chen, C., et al. 2016, *MNRAS*, **456**, 356
- [Combined reconstruction of weak and strong lensing data with WSLAP](#). **Diego, J.M.**, Tegmark, M., Protopapas, P., Sandvik, H.B. 2007, *MNRAS*, **375**, 958.

C.2: Conferences

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| 2022 | <i>Earendel, a $z=6.2$ star individually resolved thanks to lensing (invited)</i> . SEA meeting. Tenerife, Spain |
| 2022 | <i>Studying the reionization period with strongly lensed stars (invited)</i> . MAAT meeting. Spain |
| 2022 | <i>Earendel. The farthest known star (invited)</i> . TIFR Mumbai. India |
| 2022 | <i>Studying the reionization period with strongly lensed stars (invited)</i> . UNAM. Mexico |
| 2021 | <i>IFCA interests in ET. Einstein Telescope Spain Meeting</i> . Madrid |
| 2021 | <i>Constraining Compact Dark Matter with lensed GWs. 11th Iberian Gravit. Wave Meeting</i> . Valencia |
| 2021 | <i>Dark matter constrains with extremely magnified events. (invited)</i> Time Domain Cosmology with Strong Gravitational Lensing meeting. IPMU, Japan. |
| 2019 | <i>Extremely Magnified Stars. (invited)</i> Physics Department, University of Arizona, Phoenix. |
| 2019 | <i>Detecting gravitational waves through microlensing. (invited)</i> IFCA mornings, Santander. |
| 2019 | <i>Constraining Dark Matter with Extreme Magnif. Events. (invited)</i> Cosmo. meeting, Bangalore. |
| 2019 | <i>Constraining Dark Matter with Extreme Magnified Events. CosmoCruise 2019</i> . Venice. |
| 2019 | <i>Constrain. the abundance of PBHs with microlensing of GWs. Cosmo'19</i> , Aachen, Germany |
| 2018 | <i>The universe at extreme magnification. (invited talk)</i> 8 th KIAS meeting, Seoul, South Korea. |
| 2018 | <i>Why the LIGO events can not be PBHs. DM2018 meeting</i> , Santander, Spain. |
| 2017 | <i>Extreme magnification in the universe. (invited talk)</i> Physics Dep. Univ. Minnesota, USA. |
| 2017 | <i>Constraining Compact Dark matter with cluster lensing, Clusters2017 meeting</i> . Santander |
| 2016 | <i>Planck's view of the Virgo cluster, SEA meeting</i> . Bilbao |
| 2016 | <i>The Hubble Frontier Fields program and dark matter, DM2016 meeting</i> . Santander |
| 2015 | <i>Dark Matter in galaxy clusters from lensing, CosmoCruise 2015</i> . Barcelona. |
| 2015 | <i>Dark Matter in the Hubble Frontier Fields, SnowCluster Meeting, Snowbird, Utah, USA</i> |
| 2014 | <i>Free Form solutions for the Hubble Frontier Fields, Yale Frontier Fields Meeting, USA</i> |
| 2014 | <i>Dark Matter in the Hubble Frontier Fields clusters, SEA Meeting, Teruel, Spain</i> |
| 2014 | <i>The dark matter distribution in A1689, Moriond Cosmology Meeting, Italy</i> |
| 2013 | <i>All sky ISW and Lensing maps in the Jubilee Simulation, Meeting in La Cristalera, Madrid</i> |
| 2013 | <i>A large N-body simulation for J-PAS, J-PAS Meeting, Valencia</i> |
| 2012 | <i>Planck's view of Galaxy Clusters, IAU Meeting in Beijing</i> |
| 2012 | <i>SZ effect in WMAP data, Rencontres de Moriond, Italy</i> |
| 2011 | <i>Large Scale Structure: A Microwave Vision (Invited talk)</i> , IXO Meeting in Rome |
| 2006 | <i>Mass reconstruction from combined weak and strong lensing, Rencontres de Moriond, Italy</i> |
| 2004 | <i>Mass reconstruction with Lensing (Invited talk)</i> , Data Analysis in Cosmology, Valencia. |
| 2003 | <i>SZ from cross-correlating WMAP and ROSAT, NAM2003 Meeting in Dublin</i> |
| 2003 | <i>Cosmology with the Planck SZ catalog (Invited talk)</i> , SZ meeting in Chicago |
| 2001 | <i>Cosmological constraints from galaxy clusters, Mining the Sky, Germany</i> |

C.3: Projects

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| 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 (National plan: AYA)
Duration: 1 year
Amount: 10,000 EUR |
| 2007 | Title: CMB, science with the Planck satellite and development of new polarization experiments (PI. E. Martínez)
Funded by: Spanish Ministry of Education and Science |

Duration: 3 years
Amount: 510,620 EUR

- 2010 **Title:** Exploring the physics of inflation (EPI) (**PI. E. Martínez**)
Funded by: Spanish Ministry of Education and Science
Duration: 5 years
Amount: 4 Million EUR
- 2013 **Title:** Scientific exploitation of Planck and Herschel data. Readiness for J-PAS and instrumental design of future microwave experiments (**PI. E. Martínez**)
Funded by: Spanish government
Duration: 2 years
Amount: 219,960EUR
- 2015 **Title:** Lighting the Dark. Properties of dark matter through its impact on cosmological structures (**PI: J. M. Diego**)
Funded by: Spanish government (National plan: AYA)
Duration: 3 years
Amount: 83,000EUR
- 2016 **Title:** Free-Form Models for the Six Hubble Frontier Fields Clusters (**PI: Gary Bernstein & J.M. Diego**)
Funded by: Hubble Space Telescope / Space Telescope Institute
Duration: 16 months
Amount: 99,500 USD
- 2018 **Title:** Dark Lenses. The quest for the nature of Dark Matter (**PI: J. M. Diego**)
Funded by: Spanish government (National plan: AYA)
Duration: 4 years
Amount: 71390 EUR
- 2020 **Title:** Measurement of the neutrino mass through the effects of relic neutrinos on cosmological structure (**PI: J. Lim**)
Funded by: Hong Kong Research Grants Council
Duration: 1 year
Amount: 2,728,769 HK\$
- 2020 **Applied** for advanced ERC Grant (score B).
- 2021 **Title:** A new Integral Field Instrument for the OSIRIS spectrograph in the Gran Telescopio de CANARIAS (**PI: F. Prada**)
Funded by: Ministerio Ciencia e Innovacion & NextGenerationEU
Duration: 2 years
Amount: 465000 EUR

C.4 Technology transfer