Fecha del CVA	13/07/2021

Parte A. DATOS PERSONALES

Nombre y apellidos	Iñigo Arregui Uribe-Echevarria		
[redacted]			
Núm. identificación del investigador		Researcher ID	A-9992-2008
		Código Orcid	0000-0002-7008-7661

A.1. Situación profesional actual

Organismo	Instituto de Astrofísica de Canarias		
Dpto./Centro	Investigación		
[redacted]			
Categoría profesional	Científico Titular OPIS	Fecha inicio	01/08/2018
Espec. cód. UNESCO	2204.09 / 2106.02 / 1208.03		
Palabras clave	MagnetoFluids Dynamics/Solar Physics/Application of Probability		

A.2. Formación académica *(título, institución, fecha)*

Licenciatura/Grado/Doctorado	Universidad	Año
Doctorado Física	Universitat de les Illes Balears (UIB)	2003
Suficiencia Investigadora	Universitat de les Illes Balears (UIB)	2001
Licenciado Física	Universidad de la Laguna (ULL)	1997

A.3. Indicadores generales de calidad de la producción científica *(véanse instrucciones)*

Source: SAO/NASA Astrophysics Data System (ADS) http://adsabs.harvard.edu

- Author identification: Arregui, I.
- Number of publications: 92 (59 referred – 28 proceedings – 5 other)
- Last five years (2017-2021): 18 (16 referred – 2 proceedings)
- Impact in the field: 1899 citations – h-index: 22
- Scientific Meetings: 2 International School/Meeting Organisation - 1 SOC - 9 LOC - 3 Session Chair - 8 Review - 11 Invited Oral - 79 Oral - 40 Poster

Parte B. RESUMEN LIBRE DEL CURRÍCULUM *(máximo 3500 caracteres, incluyendo espacios en blanco)*

Fields of Study:

Physics - Phys. of Fluids: Magneto-Fluid Dynamics (2204.09), Phys. of Plasmas (2204.10)
Astronomy & Astrophysics - Solar System: Solar Physics (2106.02), The Sun (2106.04)
Mathematics: Probability - Application of Probability (1208.03)

Research Interests:

Magnetic Structuring of the Solar Corona - Magnetohydrodynamic Wave Theory - Solar Atmospheric Seismology - Heating of Magnetised Plasmas - Bayesian Analysis

Profile:

Astrophysicists with expertise on Magnetohydrodynamics (MHD), union of fluid dynamics and electromagnetism; and Bayesian Analysis, extension of ordinary logic to probabilistic inference for solving inversion and model comparison problems under conditions in which information is incomplete and uncertain. Aims to combine both areas to better understand the physical conditions and the dynamics of the solar atmosphere and to help solving the long-standing solar coronal heating problem.

Career and achievements:

2018-Present: Científico Titular OPIS. Appointment: 03/07/2018. Start date: 01/08/2018
2012-2018: Ramón y Cajal researcher, Instituto de Astrofísica de Canarias
2012 (May-Jul): Visiting Associate Professor, ISAS/JAXA, Japan
2006-2011: Postdoc, Universitat de les Illes Balears (UIB), Spain
2004-2006: Postdoc, Centrum Plasma Astrofysica, KU Leuven (KUL), Belgium
1998-2003: PhD student and research assistant, Universitat de les Illes Balears, Spain

1998-2003: PhD - UIB - Spain. Theoretical modelling of waves in the solar atmosphere and comparison to observations. Study of the properties of coupled MHD waves in complex non-uniform magnetic configurations. Achievements: waves in the solar atmosphere have mixed properties, no pure waves exist. Relevant to explain how wave energy in large scale motions could be transferred to small scales, enhancing dissipative processes, thus heating the plasma.

2004-05: Postdoc - KUL - Belgium. Theoretical modelling of waves in magnetic flux tube models. Application to discovery of coronal loop oscillations. Study of their damping mechanisms. Development of seismology inversion techniques for plasma diagnostics in the corona. Achievements: contributed to resonant absorption now being widely considered the most plausible damping mechanism for transverse waves in the solar atmosphere. Determination of the coronal density scale height, cross-field density structuring, and Alfvén speed using observed wave properties.

2006-11: Postdoc - UIB - Spain. Study of resonant damping in multithreaded/multi-component solar structures. Prominence oscillations, theory and seismology. Achievements: resonant damping is a robust mechanism in front of model complications. Resonant damping also explains damping of prominence oscillations.

2012: Visiting Associate Professor - ISAS/JAXA - Japan. Development of research proposal for the japanese Solar-C space mission for wave heating science objectives. Lecturing students, postdocs and staff on MHD wave seismology and heating of the solar atmosphere. Achievements and Output: proposal was presented to JAXA Project Scientists; lectures were delivered; invited review at Japanese Hinode mission international meeting.

2012-: Ramón y Cajal - IAC - Spain. Development and application of Bayesian analysis tools for seismology of the solar atmosphere. Achievements: probabilistic inference enables us to diagnose plasma conditions using all the available information in a consistent manner. It also enables us to assess which model among competing alternatives better explains observed data.

2018-: Científico Titular - IAC -Spain. Development of Bayesian inference and model comparison tools for the structure, seismology and heating of the solar atmosphere.

Parte C. MÉRITOS MÁS RELEVANTES *(ordenados por tipología)*

C.1. Publicaciones

59 Articles in International Reviewed Journals (28 1st author)

28 Conference Proceedings and Book Chapters

5 Articles in Basque Encyclopedia of Science and Technology (ISBN: 978 84 92457 00 7)

Co-edited Cambridge Univ. Press book "Bayesian Astrophysics" (ISBN 978 11 07102 13 2)

Main Publications:

I. Arregui (2018): 'Bayesian Coronal Seismology', Advances in Space Research, 61, 655-672. Review article on the philosophy and methodology of Bayesian analysis with an account of what has been achieved so far from the application of these techniques to solar atmospheric seismology.

I. Arregui (2015): 'Wave Heating of the Solar Atmosphere', *Phil. Trans. Royal Society A*, 373, pp. 20140261. Review article based on an invitation to talk at The Royal Society, on August 2014. Exposes our understanding on the role magnetic waves might have in the heating of the solar corona, based on our current theoretical understanding and observational evidence.

I. Arregui, R. Oliver, J. L. Ballester (2012): 'Prominence Oscillations', *Living Reviews in Solar Physics,* 9, 2. Review article entrusted to the Solar Group at Universitat de les Illes Balears. A 100+ pp summary on observational aspects, theoretical developments, and seismology applications of waves and oscillations in solar prominence plasmas. The three authors contributed equally. An update was published in Living Reviews in Solar Physics, 15, 3 (2018).

I. Arregui (2012): 'Inversion of Physical Parameters in Solar Atmospheric Seismology' *Astrophysics and Space Science Proceedings*, 31, Leubner, Manfred P.; Vöros, Zoltan (eds.) Review article based on the invited talk presented at the International Astrophysics Forum Alpbach on June 2011. Exposes our understanding on the remote diagnostics of solar atmospheric plasma physical conditions combining theory and observations of MHD waves.

I. Arregui, A. Asensio Ramos (2011): 'Bayesian Magnetohydrodynamic Seismology of Coronal Loops', The Astrophysical Journal, 740, 44 (10pp). The first study that suggests the use of and performs Bayesian analysis in seismology of the solar atmosphere.

I. Arregui, J. L. Ballester (2011): 'Damping Mechanisms for Oscillations in Solar Prominences', *Space Science Reviews*, 158, 169-204. Review article on the theoretical mechanisms that have been proposed to explain the time/spatial damping of waves and oscillations in solar prominence plasmas.

I. Arregui et al. (5 authors, 2007): 'MHD Seismology of Coronal Loops Using the Period and Damping of Quasi-Mode Kink Oscillations', Astronomy & Astrophysics, 463, 333-338. The first study that proposed the self-consistent combined use of all the available information on coronal loop oscillation data, for diagnostics of the coronal plasma density conditions.

C.2. Proyectos

Participated in 14 national/international projects. Last 5:

PGC2018-102108-B-I00 (PI): 01/01/2019-31/12/2021: Diagnostics of the solar atmosphere and its stellar context. Proyectos de I+D de Generación de Conocimiento. Funding: 187.500 EUR. PI: María Jesús Martínez Gonzalez & Iñigo Arregui (Instituto de Astrofísica de Canarias, IAC).

AYA2014-60476 (researcher): 01/01/2017-31/12/2017 + extension: "Solar Magnetometry in the Era of Large Telescopes". Plan Nacional de Astronomía y Astrofísica, Spain. Funding: 230.000 EUR. PI: Dr. H. Socas-Navarro & Dr. A. Asensio Ramos (IAC).

AYA2014-60476 (PI): 01/01/2015-31/12/2016: "Bayesian Analysis of the Solar Corona". Plan Nacional de Astronomía y Astrofísica, Spain. Funding: 24.200 EUR. PI: Dr. I. Arregui (IAC).

RYC-2011-08295 (PI): 15/02/2012-14/02/2017: "Solar Atmospheric Seismology". MINECO Ramón y Cajal Program, Spain. Funding: 15.000 EUR. PI: Dr. I. Arregui (IAC) Total Personal Fellowship for the 5 years (2012-17): 183.600 EUR.

AYA2011-22846 (researcher): 01/01/2012-31/12/2014: "Dynamics and Seismology of Solar Coronal Structures". Plan Nacional de Astronomía y Astrofísica, Spain. Funding: 258.940 EUR. PI: Prof. J.L. Ballester (Universitat de les Illes Balears).

C.3. Invited Reviews and Lectures

2019: Wave Based Coronal Loop Heating, 9th Coronal Loops Workshop, St Andrews, UK
2017: Heating of the Solar Corona, Solarnet IV Meeting, Spain
2016: Heating by and Energetics of Waves in the Solar Atmosphere, iBUKS2016, Belgium
2016: Prominence Oscillations, Lecture at 5th Solarnet School, Belfast, United Kingdom
2014: The Role of Waves in Coronal Heating, The Royal Society, London, UK
2012: MHD Wave Heating of the Solar Atmosphere, Hinode 6 Meeting, St. Andrews, UK
2012: Seismology and Wave Heating in the Solar Atmosphere, Lectures, ISAS/JAXA, Japan
2012: MHD Waves in the Solar Atmosphere, Lectures Series, ISAS/JAXA, Japan
2011: Inversion of Physical Parameters in the Solar Corona, IAFA2011, Austria
2011: Coronal Loop Heating by MHD Waves, Fifth Coronal Loops Workshop, Spain

C.4. Stays and Seminars at Internationally Recognised Research Centres

2018: School of Mathematics and Statistics, University of St Andrews (UK, 1 week)
2016: Departament de Física, Universitat de les Illes Balears (Spain, 3 days)
2016: DAMTP, University of Cambridge (UK, 3 days)
2012: Kwasan and Hida Observatories, Kyoto University (Japan, 3 days)
2012: National Astronomical Observatory of Japan (Japan, 1 week)
2012: ISAS/JAXA, Sagamihara (Japan, 3 months)
2010: Basque Centre for Applied Mathematics, Bilbao (Spain, 3 days)
2009-10: Department of Applied Mathematics, Sheffield University (UK, 2 months)
2004-05: Centre for Plasma Astrophysics, KU Leuven, Belgium (2 years)
1997: Sterrenkunding Instituut, Universiteit Utretch, The Netherlands (3 months)

C.5. Master and Thesis: Supervision & Committee Membership

Co-supervisor 2 PhD students – Universitat Illes Balears & Universidad de La Laguna, Spain
2015: Member of Committee for 1 PhD Thesis – Universidad de La Laguna, Spain
2009-10: Member of Committee for 2 PhD Thesis – Universitat de les Illes Balears, Spain
2009: Co-supervisor of 1 Master Thesis – Universitat de les Illes Balears, Spain
2009: Member of Committee for 1 PhD Thesis – Universitat Politecnica Valencia, Spain

C.6. Referee or panelist for funding agencies and journals

Panelist: National Science Center (Poland) 2019 and 2020 project calls
Panelist: NASA Heliophysics Supporting Research projects evaluation and selection (2017)
External referee for projects: UK STFC (2018) – ERC CoG (2014) – Belgium FWO (2015)
Personnel evaluation: IAC (2014-17) – UNIBASQ (2017) – The Royal Society (2017)
Referee for journals: Nature Physics - Nature Communications - The Astrophysical Journal - The Astrophysical Journal Letters - Monthly Notices of the Royal Astronomical Society - Space Science Reviews - Astronomy & Astrophysics - Solar Physics - Annals of the New York Academy of Sciences - The European Physical Journal D

C.7. Teaching
Universitat Illes Balears (2001-03, undergraduate) - Universidad de La Laguna (2014-19, undergraduate) - KULeuven, Belgium (2020, master)