CURRÍCULUM VÍTAE NORMALIZADO

Emilia Rodriguez-Solano Ribeiro

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Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

Extensive experience in tokamak plasma physics, theory and experiment, in various international institutions.

Thesis (1986) on neoclassical theory of plasma transport in stellarators and particle orbits, applied to the design of the TJ-II stellarator (1986), largely developed in ORNL.

From 1987, mostly worked on tokamaks. In Texas I developed an iron core model for plasma equilibrium reconstruction, and provided theoretical and computational support for the design of the tokamaks TEXT-Upgrade and USTX: omputation of equilibria and MHD stability, current and voltage requirements for power supplies, forces and torques on coils and feeds, insulation requirements to survive disruptions, etc... Worked on neoclassical theory: effect of an X-point on neoclassical transport, and effects of charge exchange with neutrals on plasma rotation.

Served in the Science Subcommitte of FESAC, an advisory body to the Office of Fusion Energy Science in the USA. Served in the Board of the Division of Plasma Physics of the EPS. Chaired Magnetic Confinement PC of 2004 EPS DPP.

While in Garching in 1997-1998 I worked on equilibrium and pedestal physics for ITER, and on neoclassical theory on the stellarator W7-AS. At that time I started studying criticality conditions in non-linear PDEs, such as the Grad-Shafranov equation. In 2004 I proposed that equilibrium criticality is the mechanism for formation of transport barriers. Later in 2012 R Hazeltine and I developed the theory further and proposed that the L-H transition is a magnetic phase transition, providing a long-sought trigger mechanism.

From 1999 I have most often worked at JET, in various roles. In scientific management I have been Scientific Assistant to JET EFDA Leader, Diagnostics Officer of the JET Enhancements Department and Responsible Officer for the JET1 Physics Programme.

In JET-C, I showed that ELMs result in sudden toroidal current loss and destruction of the pre-ELM separatrix, followed by the formation of a new (smaller) separatrix, the so-called strike jumps. I also studied the Outer Mode, known to appear at JET in low recycling, hot pedestal conditions. We identified the JET Outer Mode as a rotating current ribbon, at the flat-top of the pedestal, analogous to a smoke ring. In collaboration with the DIII-D team, I have shown the JET Outer Mode shares many characteristics with the DIII-D Edge Harmonic Oscillation (EHO), which is present in Quiescent H-mode scenarios. I am a member of the WPTE RT08 team, seeking to develop Quiescent H-mode in AUG.

In slow L-H transitions at JET I have identified the M- mode, an n=0 magnetic oscillation present in early H-modes. In RF heated plasmas its frequency is proportional to the poloidal Alfvén frequency.

I lead L-H transition studies at JET since 2017, including on-going experiments in He, Deuterium, Deuterium-Tritium and Tritium. We have recently shown that Er shear is unlikely to provide the trigger for the L-H transition, since there is no evidence of it changing along the heating power ramp. We have also shown that the L-H power threshold is minimized at higher densities in Helium than in Deuterium, and we have clearly documented a reduction of the density at which the L-H transition threshold is minimum as the mass of the hydrogenic species increases: lowest in Tritium, highest in Proteum.

I am 1st author of 12 journal articles, with 189 citations as of Fecruary 2024. I contribute to many JET team efforts.
My research is well known in the field to be highly original, often succesfully challenging prevailing views.

General quality indicators of scientific research

This section describes briefly the main quality indicators of scientific production (periods of research activity, experience in supervising doctoral theses, total citations, articles in journals of the first quartile, H index...). It also includes other important aspects or peculiarities.

Since 2017 I am the Scientific Coordinator of L-H transition experiments at JET, the most fusion capable tokamak in the world. I lead the L-H research team (about 50 contributors), propose, defend, coordinate and execute experiments, and I coordinate the data validation and analysis of a varied research team. Uniquely, we have been able to study the conditions required to transition from low to high confinement (L-H transition) in Hydrogen, Deuterium, Tritium and Helium, as well as in relevant mixtures, including Deuterium-Tritium (D-T). D-T plasmas are used to create fusion energy. During the last 6 years the L-H team lead by myself were fully inmersed in that work, despite the challenges posed by COVID and Brexit. When possible I was on-site for experiment execution.

Over the last 5 years I have been invited to make Oral presentations at the last two IAEA Fusion Energy conferences (with corresponding publications in Nuclear Fusion). The IAEA is the most prestigious conference in our field. My co-authors have been invited speakers at the European Physical Society Conference and the Asia Pacific Plasma Physics conference. I submit 3 1st author Nuclear Fusion articles and 2 2nd author articles for this "sexenio de investigación".

As an L-H transition ITPA expert, I'm a co-author of the Transport and Confinement chapter of the Nuclear Fusion Special Issue “On the Path to Burning Plasma Operation”.

I am a named author in 166 refereed journal papers, with 7047 citations as of February 2024. Almost all articles are published in high impact scientific journals of my field: Nuclear Fusion, Plasma Physics and Controlled Fusion, Physics of Plasmas, Phys. Rev. Letters. I don't count here unrefereed conference proceedings, such as IAEA, EPS, APS or Sherwood. Nor do I count the JET Team papers in which I made only generic contributions, such as helping in the control room.I am first author of 12 of them, accumulating 189 citations to those papers only. My top cited 1st author paper has 55 citations (PRL).

Note that the years in which my job is scientific management I publish less, due to lack of time, and because I choose not to add my name explicitly when my physics contribution is not substantial, or when I disagree with some of the conclusions.

More importantly, my research is well known in the field to be highly original, often challenging prevailing views.

I have 5 sexenios and 5 quinquenios acknowledged. I'm applying now for the 6th sexenio.

Emilia Rodriguez-Solano Ribeiro

Surname(s):	**Rodriguez-Solano Ribeiro**
Name:	**Emilia**
ORCID:	**0000-0002-4815-3407**
ScopusID:	**7006833757**
ResearcherID:	**A-1212-2009**
Date of birth:	**14/03/1960**
Gender:	**Female**
Nationality:	**Spain**
Contact aut. region/reg.:	**Community of Madrid**
Email:	**emilia.solano@ciemat.es**
Personal web page:	**http://www-fusion.ciemat.es/wiki/User:Esolano**

Current professional situation

Employing entity: Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas
Type of entity: Public Research Body
Department: Laboratorio Nacional de Fusion
Professional category: Cientifico Titular de OPIs
City employing entity: Madrid, Community of Madrid, Spain
Phone: (0034) 913466159
Email: emilia.solano@ciemat.es
Start date: 02/12/2011
Type of contract: Civil servant
Dedication regime: Full time
Primary (UNESCO code): 220809 - Plasma containment
Secondary (UNESCO code): 220721 - Thermonuclear fusion
Tertiary (UNESCO code): 220207 - Interaction of electromagnetic waveswith matter
Performed tasks: I study plasma physics applied to magnetic confinement devices with applications to the generation of energy via nuclear fusion. For a few years (03/2013-10/2015) I worked in JET management, first (03/2013-12/2014) within the JET EFDA CSU, and later (01/2014-10/2015) in the Eurofusion ITER Physics Department. The job entailed scientific management and coordination at JET. I was Data Validation co-chair, and responsible for integrating diagnostics with the research programme. My research at JET includes work on equilibrium reconstruction, pedestal physics and ELMs. I predicted and demonstrated that strike points change suddenly at ELMs due to loss of plasma current. I studied the so-called Outer Mode and showed that it is a closed ribbon of current, along a resonant field line, and that it appears to be located at the pedestal flat-top. In L-H transition physics I identified the M-mode, an axisymmetric MHD oscillation the appears at the transition. Since 11/2015 I have returned to full-time research. I am now working on pedestal physics, particularly L-H transition studies, pedestal MHD, equilibrium reconstruction and I the impact of Tungsten radiation on pedestal behaviour. I lead L-H transition nd some pedestal studies at JET, including experiments with Hydrogen, Deuterium, Tritium and Helium plasmas, and relevant mixtures: H+D, H+He, H+T, D+T.
Identify key words: Physics - Plasma and fluid
Field of management activity: Centro Europeo

Previous positions and activities

	Employing entity	Professional category	Start date
1	Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas	Investigador Titular de OPIs	13/05/2005
2	Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas	Researcher Ramón y Cajal	08/2002
3	JET and CIEMAT	Researcher	02/1999
4	Max-Planck-Institut für PlasmaPhysik, Garching, G	Guest Researcher	05/1997
5	Fusion Research Center, Univ. of Texas at Austin, USA	Research Associate	11/1990
6	Fusion Research Center, Univ. of Texas at Austin, USA	Postdoctoral Fellow	05/1987
7	Instituto de Estudios Nucleares, Junta de Energía Nuclear, Madrid, Spain	Graduate Student	10/1983
8	Instituto Estudios Nucleares, Junta de Energía Nuclear, luego CIEMAT	Graduate Student	03/1985

1 **Employing entity:** Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas
Department: Laboratorio Nacional de Fusión, Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas
City employing entity: Madrid, Community of Madrid, Spain
Professional category: Investigador Titular de OPIs
Educational Management (Yes/No): No
Start-End date: 13/05/2005 - 01/12/2011
Duration: 11 years - 6 months
Type of contract: Civil servant
Field of management activity: Centro Europeo de Investigación

2 **Employing entity:** Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas
Type of entity: Public Research Body
Professional category: Researcher Ramón y Cajal
Start-End date: 08/2002 - 05/2005
Duration: 2 years - 9 months

3 **Employing entity:** JET and CIEMAT
Type of entity: Centro Europeo de Investigación
Professional category: Researcher
Educational Management (Yes/No): No
Start-End date: 02/1999 - 07/2002
Duration: 3 years - 5 months
Type of contract: Seconded to JET
Performed tasks: Scientific Assistant to Associate Director of Heating and Operations Department, JET, seconded from CIEMAT. Continuing research in structural stability theory, in the background. Learning about JET results, assisting JET Director by organising international meetings, supporting divertor design for the Big-JET proposal, training as Session Leader. In September 1999, I became Scientific Assistant to the JET EFDA Leader, within the JET CSU. EFDA implied a complete restructuring of fusion research in Europe, and in JET in particular. Within the CSU my job was largely to provide scientific input to inform management decisions, but I was often involved on organisational issues as well. Amongst other tasks, I worked with the JET Task Force Leaders to develop a long term physics programme, to guide proposals for the first JET Enhancement Programme in 2000. After the proposal was accepted, I coordinated the necessary physics studies needed for design specifications, until a project leader and a physics leader were hired to take the projects forward. The job had a large management component. During my stays in the JET CSU I had little time to work on my own research. This is evidenced by gaps in my publication record. Generally I chose not to appear as co-author of summary articles written by myself on behalf of the whole team and presented by J. Pamela (head of JET) (1999-2004).
Field of management activity: Centro Europeo

4 **Employing entity:** Max-Planck-Institut für PlasmaPhysik, Garching, G **Type of entity:** Public Research Body
Professional category: Guest Researcher
Start-End date: 05/1997 - 11/1998
Performed tasks: Dual position: consultant for the Edge Physics Group of the ITER-Joint Central Team and Guest Scientist for the Max-Planck-Institut für PlasmaPhysik, both in Garching, Germany. In the ITER position, I studied edge H-mode physics (data analysis, data fitting protocols, literature search); organized a meeting of international experts in H-mode; adapted existing codes for equilibrium and MHD studies of ITER; begun to develop analytical theory for the LH transition. In my IPP job, in collaboration with M. Taguchi, I worked on generalizing results from DKES (a code that solves a simplified drift-kinetic equation, in full 3D geometry) to properly account for interspecies momentum exchange. Additionally, I did research in theoretical plasma physics, studying bifurcation theory and its application to explaining the L-H transition and other tokamak confinement regimes.

5 **Employing entity:** Fusion Research Center, Univ. of Texas at Austin, USA
Professional category: Research Associate
Start-End date: 11/1990 - 06/1996
Performed tasks: Continuing applied research as before, collaborating with TEXT experimentalists on plasma equilibrium analysis: adapted existing equilibrium codes (EFIT, SEP, PSICONT) to new computer environment (from VAX to IBM 6000, RISC System and Unix). Also with the experimental group, working on position detection and its feedback control, searching for H-mode. Collaborated with L. Lao (GA) and Dennis O'Brien (JET) on their adaptation of EFIT to JET.

6 **Employing entity:** Fusion Research Center, Univ. of Texas at Austin, USA
Professional category: Postdoctoral Fellow
Start-End date: 05/1987 - 10/1990
Performed tasks: Research topics included equilibrium (modifying and running EFIT) and stability studies for the diverted tokamak TEXT-Upgrade, iron core effects on tokamak equilibrium and stability (with G. H. Neilson from ORNL and L.L. Lao, from GA), neoclassical effects of particle sources on transport (with R. D. Hazeltine, IFS), and studies on H-mode. Many smaller applied problems for the TEXT-Upgrade project are solved as they come, often in collaboration with P. H. Edmonds and A. J. Wootton

7 **Employing entity:** Instituto de Estudios Nucleares, Junta de Energía Nuclear, Madrid, Spain **Type of entity:** Public Research Body
Professional category: Graduate Student
Start-End date: 10/1983 - 12/1986
Performed tasks: Development of transport code for the tokamak TJ-I at the Junta de Energia Nuclear, with J. Guasp

8 **Employing entity:** Instituto Estudios Nucleares, Junta de Energía Nuclear, luego CIEMAT
Professional category: Graduate Student
Start-End date: 03/1985 - 03/1986 **Duration:** 1 year
Type of contract: Grant-assisted student (pre or post-doctoral, others)
Performed tasks: Study of neoclassical transport in TJ-II (Spanish flexible heliac) in the Fusion Energy Division of the Oak Ridge National Laboratory, with J. Lyon and B. Carreras as local collaboration leaders. The work included orbit computation with J. A. Rome, numerical studies of the drift kinetic equation with S.P. Hirshman's code DKES, and analytical work in collaboration with K.C. Shaing. I had a predoctoral grant from CIEMAT and a NATO grant for the stay in Oak Ridge National Laboratory.

Education

University education

1st and 2nd cycle studies and pre-Bologna degrees

1 **University degree:** Higher degree
Name of qualification: Licenciada con Grado
Degree awarding entity: Univ.Complutense de Madrid **Type of entity:** University
Date of qualification: 05/1983

2 **University degree:** Higher degree
Name of qualification: Licenciada en Ciencias Físicas
Degree awarding entity: Univ. Complutense de Madrid
Date of qualification: 09/1982

Doctorates

Doctorate programme: Doctor en Ciencias Físicas
Degree awarding entity: Univ. Complutense de Madrid
Date of degree: 16/12/1986

Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
English	A1	A1	A1	A1	A1
Spanish	A1	A1	A1	A1	A1
Portuguese	A1	A1	A2	A2	A2

Scientific and technological experience

Scientific or technological activities

R&D projects funded through competitive calls of public or private entities

1 **Name of the project:** ESTUDIO DE TRANSICIONES L-H Y PEDESTAL EN MODO H EN TOKAMAKS
Identify key words: Physics - Plasma and fluid; Mhd and other fluid dynamics; Controlled fusion
Identify key words: Physics - Plasma and fluid; Numerical simulation; Mhd and other fluid dynamics; Controlled fusion
Type of project: Research and development, including transfer
Geographical area: National
Degree of contribution: Researcher
Entity where project took place: Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas
Type of entity: Public Research Body
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): Emilia Rodriguez-Solano Ribeiro; Elena de la Luna Gargantilla
Nº of researchers: 3
Nª people/year: 2
Type of participation: Principal investigator
Name of the programme: Programa Estatal de Investigación, Desarrollo e Innovación orientada a los Retos de la Sociedad
Code according to the funding entity: PID2021-127727OB-I00
Start-End date: 01/09/2022 - 30/08/2026
Duration: 4 years
Participating entity/entities: CEA, Cadarache, France; CNRS/Aix-Marseille University, Marseille, France; Centre National de la Recherche Scientifique, Marseille, France; Consorzio RFX, Padova, Italy; General Atyomics, California, USA; Instituto de Plasmas e Fusão Nuclear, Lisbon, Portugal; Laboratorio Nacional de Fusion, CIEMAT, Madrid, Spain
Total amount: 108.900 €
Sub-project amount: 108.900 €
Percentage as grant: 100
Percentage as credit: 0
Relevant results: L-H transition results in He and D plasmas. Fiund similarities between EHO and JET Outer Mode. Participation in Quiescent H-mode research in DIII-D and AUG
Dedication regime: Full time
Applicant's contribution: Principal Investigator #1. I lead the project, interact with authorities, maintain budget control. I am in charge of L-H transition team at JET.

2 **Name of the project:** Estudios del pedestal en modos de alto confinamiento en tokamaks en condiciones relevantes para ITER
Identify key words: Mhd and other fluid dynamics; Controlled fusion
Identify key words: Numerical simulation; Mhd and other fluid dynamics; Controlled fusion
Type of project: Research and development, including transfer
Geographical area: National
Degree of contribution: Researcher
Entity where project took place: Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas
Type of entity: Public Research Body
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): Elena de la Luna Gargantilla; Emilia Rodriguez-Solano Ribeiro

Nº of researchers: 3
Type of participation: Principal investigator
Name of the programme: Programa Estatal de Investigación, Desarrollo e Innovación orientada a los Retos de la Sociedad
Code according to the funding entity: FIS2017-85252-R
Start-End date: 18/01/2018 - 30/09/2021 **Duration:** 3 years - 6 months
Total amount: 72.600 € **Sub-project amount:** 72.600 €
Percentage as grant: 100 **Percentage as credit:** 0
Relevant results: L-H transition results in He and D plasmas. Fiund similarities between EHO and JET Outer Mode. Participation in Quiescent H-mode research in DIII-D and AUG
Dedication regime: Full time
Applicant's contribution: Principal Investigator #2.

3 **Name of the project:** EUROfusion / JET Work Package WPJET1
Identify key words: Controlled fusion
Identify key words: Controlled fusion
Type of project: Research and development, including transfer **Geographical area:** European Union
Degree of contribution: Scientific coordinator
Entity where project took place: JET **Type of entity:** Public Research Body
City of entity: Culham, United Kingdom
Name principal investigator (PI, Co-PI....): Emilia Rodríguez-Solano Ribeiro
Nº of researchers: 50
Funding entity or bodies:
Asociación EURATOM/CIEMAT para la Fusión **Type of entity:** Europa

Type of participation: Co-ordinator
Name of the programme: EUROFusion
Code according to the funding entity: 633053
Start-End date: 2017 - 2020 **Duration:** 4 years
Participating entity/entities: Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas; EUROfusion
Relevant results: Led L-H threshold studies at JET. Investigating local conditions for L-H transitions
Applicant's contribution: Scientific Coordination of WPJET experiments M18-13: H/He mixtures for non-active phase of ITER operation M18-14: Isotope effects on L-H transition power threshold, including H, H+T, T plasmas M18-15: Access to type-I ELMs with reduced torque M18-46: L-H transition power threshold and ELMs in Helium plus participation in M18-02, M18-01, M18-03, M18-07, M18-08 M21-14: Isotope effects on L-H transition power threshold, in DT

4 **Name of the project:** EUROfusion / JET Work Package WPJET1
Identify key words: Controlled fusion
Identify key words: Controlled fusion
Type of project: Research and development, including transfer **Geographical area:** European Union
Degree of contribution: Scientific coordinator
Entity where project took place: JET **Type of entity:** Public Research Body
City of entity: Culham, United Kingdom
Name principal investigator (PI, Co-PI....): Xavier Litaudon
Nº of researchers: 500
Type of participation: Co-ordinator
Name of the programme: EUROFusion
Code according to the funding entity: 633053

Start-End date: 2014 - 2018 **Duration:** 4 years
Total amount: 6.000.000 €
Relevant results: Research on plasma physics and control at JET
Applicant's contribution: Scientific Coordination of WPJET experiment "B15-03: Effect of W on pedestal-like Te in L-mode" at JET, Culham, UK. Participation in WPJET Tasks "T15-02: Pedestal Physics" and "T15-10: Improved equilibrium reconstruction"

5 **Name of the project:** Incidencia de las resonancias magnéticas en el transporte y la estabilidad de plasmas de fusión por confinamiento magnético
Identify key words: Mhd and other fluid dynamics
Type of project: Research and development, including transfer
Degree of contribution: Researcher
Entity where project took place: Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas **Type of entity:** Public Research Body
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): Francisco Castejón Magaña; Daniel López Bruna; Emilia Rodriguez-Solano Ribeiro; Antonio López-Fraguas; Maria Antonia Ochando; Francisco Medina; Baojun Sun; Adriana Martín de Aguilera
Nº of researchers: 7
Start-End date: 01/2015 - 12/2017 **Duration:** 3 years
Total amount: 59.000 €
Applicant's contribution: Investigación del posible origen magnético de la transición a modo H en el tokamak JET.

6 **Name of the project:** Data Analysis based on Automatic Learning and Intelligent Data Acquisition Systems: advanced models for the nuclear fusion environment, ENE2012-38970-C04-01
Identify key words: Mhd and other fluid dynamics; Controlled fusion
Identify key words: Mhd and other fluid dynamics
Type of project: Research and development, including transfer **Geographical area:** National
Degree of contribution: Researcher
Entity where project took place: Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas **Type of entity:** Public Research Body
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): Jesús Vega Sánchez; Raul Castro; Emilia Rodriguez-Solano Ribeiro
Nº of researchers: 10
Type of participation: Team member
Start-End date: 01/2013 - 12/2015
Total amount: 117.000 €
Applicant's contribution: Definition of research objective: automatic identification of MHD modes based on spectrograms of signals from fast Mirnov coils in the JET tomaka. Application to detection of Outer Modes, identified as current filaments located at the plasma pedestal, spinning toroidally with the plasma.

7 **Name of the project:** JET Experiments
Identify key words: Controlled fusion
Identify key words: Controlled fusion
Degree of contribution: Scientific coordinator
Entity where project took place: JET
City of entity: Culham, United Kingdom
Type of participation: Principal investigator

Start-End date: 2011 - 2012
Applicant's contribution: Scientific Coordination of JET experiment "Ex-2.2.9: Comparison of ELM control techniques with kicks" , "Ex-3.2.3: Pedestal Stability" and "Bx-3.2.5: Investigation of M-mode", all at JET, Culham, UK. Participation in various other experiments, notably in "Ex-3.2.1: L-H power threshold studies: Be/W vs. C"

Scientific and technological activities

Scientific production

1 **H index:** 34
Date of application: 05/11/2021
Fuente de Indice H: WOS

2 **H index:** 35
Date of application: 05/11/2021
Fuente de Indice H: GOOGLE SCHOLAR

3 **H index:** 26
Date of application: 05/11/2021
Fuente de Indice H: SCOPUS

Publications, scientific and technical documents

1 E. R. Solano; R. D. Hazeltine. Magnetic phase transitions in plasmas and transport barriers. Nuclear Fusion. 52 - 11, pp. 114017. IOP, 2012. Available on-line at: <http://dx.doi.org/10.1088/0029-5515/52/11/114017>.
Type of production: Scientific paper **Format:** Journal
Position of signature: 1
Total no. authors: 2 **Corresponding author:** Yes
Relevant results: A model of magnetic phase transitions in plasmas is presented: plasma elements with pressure excess or defect are dia- or paramagnets and move radially under the influence of the background plasma magnetization. It is found that magnetic phase separation could be the underlying mechanism of L to H transitions and drive transport barrier formation. Magnetic phase separation and the associated pedestal build-up, as described here, can be explained by the well-known interchange mechanism, now reinterpreted as a magnetization interchange. The interchange mechanism can drive motion of plasma elements even when stable. A testable necessary criterion for the L to H transition is presented.
Relevant publication: Yes

2 ER Solano; PJ Lomas; B Alper; GS Xu; Y Andrew; G Arnoux; A Boboc; L Barrera; P Belo; MNA Beurskens; M Brix; K Crombe; E de la Luna; S Devaux; T Eich; S Gerasimov; C Giroud; D Harting; D Howell; A Huber; G Kocsis; A Korotkov; A Lopez-Fraguas; MFF Nave; E Rachlew; F Rimini; S Saarelma; A Sirinelli; SD Pinches; H Thomsen; L Zabeo; D Zarzoso. Observation of Confined Current Ribbon in JET Plasmas. Physical Review Letters. 104 - 18, 2010. Available on-line at: <http://gateway.webofknowledge.com/gateway/Gateway.cgi?GWVersion=2&SrcAuth=ORCID&SrcApp=OrcidOrg&DestLinkType=FullRecord&DestApp=WOS_CPL&KeyUT=WOS:0
Type of production: Scientific paper **Format:** Journal
Relevant results: New insight on pedestal stability: in JET, with low gas fuelling and low recycling conditions, an Outer Mode often appears, delaying ELMs. The outer mode had been assumed to be an ideal kink, unstable in the steep gradient region of the pedestal, which would eventually grow into an ELM. We have now found that the outer mode is a fairly stable current ribbon, lasting as much as 1.5 s, located at the top of the pedestal, where the

pressure gradient is very low. There are tantalising similarities with the EHO observed in DIII-D. This could provide a new route to ELM-free operation.
Relevant publication: Yes

3 Emilia R. Solano; S. Jachmich; F. Villone; N. Hawkes; Y. Corre; B. Alper; A. Loarte; R.A. Pitts; K. Guenther; A. Korotkov; M. Stamp; P. Andrew; J. Conboy; T. Bolzonella; M. Kempenaars; A. Cenedese; E. Rachlew; JET EFDA contributors. ELMs and strike point movements. Nuclear Fusion. 48, pp. 065005. IOP, 2008. Available on-line at: <http://dx.doi.org/10.1088/0029-5515/48/6/065005>. ISSN 0029-5515
Type of production: Scientific paper **Format:** Journal
Position of signature: 1
Total no. authors: 17 **Corresponding author:** Yes
Relevant results: A detailed study of position changes of plasma strike points before and after edge localized modes (ELMs) in JET was carried out. A hypothesis being tested is that in an ELM previously closed edge field lines would open up, releasing plasma current and leading to the formation of a new, smaller separatrix. It was observed that after each ELM strike points have shifted a few centimetres towards the plasma centre (up in JET). In some cases a transient (<100?μs), upwards large (>10?cm) jump of strike positions was observed first. It was followed by an equally fast jump down to the shifted strike positions. Such behaviour has not been described in previous computational models of the ELM. Therefore two novel instability mechanisms are presented, which contribute to explain the changes in strike point position: an X-point instability, due to positive toroidal current density at the X-point, and a diamagnetic instability, due to negative inboard toroidal current density.
Relevant publication: Yes

4 Emilia R. Solano. Criticality of the Grad–Shafranov equation: transport barriers and fragile equilibria. PPCF. 46, pp. L7. IOP, 2004. Available on-line at: <http://dx.doi.org/10.1088/0741-3335/46/3/L02>. ISSN 0741-3335
Type of production: Scientific paper **Format:** Journal
Position of signature: 1
Total no. authors: 1 **Corresponding author:** Yes
Relevant results: Treated Grad-Shafranov equation as non-linear PDE. Found a simple condition that characterises critical points, at which the number of solutions of the equation changes. The mathematical criticality condition can be interpreted as critical plasma magnetisation, the boundary between para and diamagnetic plasmas. Proposed that this is what leads to the formation of transport barriers.
Relevant publication: Yes

5 NC HAWKES; Y ANDREW; CD CHALLIS; et al.. The formation and evolution of extreme shear reversal in JET and its influence on local thermal transport. Plasma Physics and Controlled Fusion. 44 - 7, pp. 1105 - 1125. IOP, 2002.
Type of production: Scientific paper **Format:** Journal
Relevant results: Observation of hollow current density profiles (current hole), shown to be physically possible solutions of plasma equilibrium, present in plasmas with a strong internal transport barrier. I convinced the diagnosticians that what they were seeing could be real.
Relevant publication: Yes

6 NC Hawkes; BC Stratton; T Tala; CD Challis; G Conway; R DeAngelis; C Giroud; J Hobirk; E Joffrin; P Lomas; P Lotte; J Mailloux; D Mazon; E Rachlew; S Reyes-Cortes; E Solano; KD Zastrow. Observation of zero current density in the core of JET discharges with lower hybrid heating and current drive. Physical Review Letters. 87 - 11, pp. art. no. - 115001. 08/2001.
Type of production: Scientific paper **Format:** Journal
Relevant publication: Yes

7 ER Solano; GH Neilson; LL Lao. Equilibrium and Stability Studies for an Iron Core Tokamak with a Poloidal Divertor. Nuclear Fusion. 30 - 6, pp. 1107 - 1115. 1990.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes

Relevant results: Developed semi-analytical model of poloidal magnetic fields due to poloidal coils and iron core. Showed that the iron transformer in TEXT has strong impact on separatrix shape, radial and vertical external fields required to hold plasma in equilibrium, and strong de-stabilising effect on vertical position control.
Relevant publication: Yes

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Type of production: Scientific paper **Format:** Journal

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Type of production: Scientific paper **Format:** Journal

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Type of production: Scientific paper **Format:** Journal

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Type of production: Scientific paper **Format:** Journal

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Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes

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Type of production: Scientific paper **Format:** Journal
Position of signature: 9 **Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

Total no. authors: 15

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Type of production: Scientific paper **Format:** Journal
Position of signature: 1
Corresponding author: Yes

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Type of production: Scientific paper **Format:** Journal

Degree of contribution: Author or co-author of article in journal with external admissions assessment committee

Corresponding author: No

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Degree of contribution: Author or co-author of article in journal with external admissions assessment committee

Corresponding author: No

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Type of production: Scientific paper **Format:** Journal

Position of signature: 24 **Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

Total no. authors: 27 **Corresponding author:** No

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Position of signature: 11 **Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee

Total no. authors: 12

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Total no. authors: 41

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Corresponding author: No

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Corresponding author: Yes

Works submitted to national or international conferences

1 **Title of the work:** L-H transition results from recent Tritium and Deuterium-Tritium campgnais at JET
Name of the conference: 29th IAEA Fusion Energy Conference (FEC 2020)
Type of event: Conference
Type of participation: Participatory - invited/keynote talk **Reasons for participation:** Representing
Corresponding author: Yes
City of event: London, United Kingdom
Date of event: 16/10/2023
End date: 21/10/2023
Organising entity: IAEA **Type of entity:** Foundation
Publication in conference proceedings: Yes **With external admission assessment committee:** Yes
Emilia R Solano. "L-H transition results from recent Tritium and Deuterium-Tritium campgnais at JET".

2 **Title of the work:** The power threshold of H-mode access in tritium and deuterium-tritium plasmas at JET with ITER-like wall
Name of the conference: 48th EPS Conference on Plasma Physics
Type of event: Conference
Type of participation: Participatory - invited/keynote talk **Reasons for participation:** Upon invitation
Corresponding author: No
City of event: Maastricht, Holland
Date of event: 27/06/2022
End date: 01/07/2022
Organising entity: European Physical Society **Type of entity:** Foundation
With external admission assessment committee: Yes
Type of contribution: Scientific paper
Gregor Birkenmeier; Emilia R. Solano. "The power threshold of H-mode access in tritium and deuterium-tritium plasmas at JET with ITER-like wall".

3 **Title of the work:** L-H transition studies at JET : Helium and H, D, T
Name of the conference: 47th EPS Conference on Plasma Physics
Type of event: Conference
Reasons for participation: Upon invitation
Corresponding author: Yes
City of event: Remote,
Date of event: 21/06/2021

Organising entity: European Physical Society
Solano. "L-H transition studies at JET : Helium and H, D, T".

4 **Title of the work:** L-H TRANSITION STUDIES AT JET: TRITIUM, HELIUM AND DEUTERIUM
Name of the conference: 28th IAEA Fusion Energy Conference (FEC 2020)
Corresponding author: Yes
City of event: remote,
Date of event: 10/05/2021
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5 **Title of the work:** Power balance analysis of JET-ILW L-H transition in Deuterium plasmas
Name of the conference: 4th Asia-Pacific Conference on Plasma Physics
Type of participation: Participatory - invited/keynote **Reasons for participation:** Upon invitation talk
Corresponding author: No
City of event: Remote,
Date of event: 26/10/2020
End date: 31/10/2020
Organising entity: Division of Plasma Physics, Association of Asia Pacific Physical Societies
Publication in conference proceedings: Yes
P Vincenzi; ER Solano. "Power balance analysis of JET-ILW L-H transition in Deuterium plasmas". Available on-line at: <https://www.aappsdpp.org/DPP2020/pdf/MF1-I5.pdf>.

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Name of the conference: 46th EPS Conference on Plasma Physics
Type of event: Conference
Type of participation: Participatory - invited/keynote **Reasons for participation:** Upon invitation talk
Corresponding author: No
City of event: Milan, Italy
Date of event: 08/07/2019
End date: 06/07/2018
Organising entity: European Physical Society
Emilia R Solano. "europhysics conference abstracts Vol. 42A ISBN: 979-10-96389-08-7". 2019.

7 **Title of the work:** Ion heat channel at the L-H transition in JET-ILW. P2.1081
Name of the conference: 46th EPS Conference on Plasma Physics
Corresponding author: No
City of event: Milan, Italy
Date of event: 08/07/2019
End date: 06/07/2018
Organising entity: European Physical Society
Pietro Vicenzi; Emilia R Solano. "europhysics conference abstracts Vol. 42A ISBN: 979-10-96389-08-7".

8 **Title of the work:** Power balance analysis at the L to H transition in JET-ILW
Name of the conference: 23rd Joint EU-US Transport Task Force Meeting
Corresponding author: Yes
City of event: Sevilla, Andalusia, Spain
Date of event: 11/09/2018
End date: 14/09/2018

Organising entity: EU-US Transport Task Force
Emilia R Solano.

9 **Title of the work:** Using rotating current ribbons to model MHD: the EHO
Name of the conference: 45th EPS Conference on Plasma Physics
Corresponding author: Yes
City of event: Praga, Czech Republic
Date of event: 02/07/2018
End date: 06/07/2018
Organising entity: European Physical Society
Solano, Emilia R.; K. H. Burrell, E. J. Strait, T. E. Evans, S. R. Haskey; C. M. Collins, T. H. Osborne, E. Alessi, Xi Chen, B. S. Victor; DIII-D team and JET Contributors. "europhysics conference abstracts Vol. 42A ISBN: 979-10-96389-08-7".

10 **Title of the work:** Optimising the use of ICRF waves in JET hybrid plasmas for high fusion yield
Name of the conference: 44th EPS Conference on Plasma Physics
Type of participation: Participatory - oral communication
Corresponding author: No
City of event: Milan, Italy
Date of event: 26/06/2017
End date: 06/07/2017
Organising entity: European Physical Society
Mervi Mantsinen; Emilia R Solano. "europhysics conference abstracts Vol. 41F 979-10-96389-07".

11 **Title of the work:** Characterising W radiation in JET-ILW plasmas
Name of the conference: 43rd EPS Conference on Plasma Physics
City of event: Leuven, Belgium
Date of event: 04/07/2016
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
Emilia R Solano; I Coffey; A Huber; SS Henderson; M O'Mullane; Francis Casson; H Summers; T P{\"u}tterich; ME Puiatti; L Carraro; others. "43rd EPS Conference on Plasma Physics". 2016.

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Date of event: 2016
Type of contribution: Scientific book or monograph
I BORODKINA; D BORODIN; S BREZINSEK; IV TSVETKOV; VA KURNAEV; C GUILLEMAUT; C GIROUD; S SILBURN; I BALBOA; E SOLANO; others. "2nd International Summer School on the Physics of Plasma-Surface Interactions". pp. 10 - 10. 2016.

13 **Title of the work:** Experimental characterization of M-Mode in JET tokamak
Name of the conference: 42nd EPS Conference on Plasma Physics
Date of event: 2015
Organising entity: European Physical Society
N Vianello; ER Solano; E Delabie; J Hilllesheim; D Refy; P Buratti; J Boom; R Coelho; A Figueiredo; H Lerche; others.

14 **Title of the work:** Magnetic Oscillations near LH transition: experimental observations and comparisons with MHD theory
Name of the conference: 15th International Workshop on H-Mode and Transport Barrier Physics
Date of event: 2015

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15 **Title of the work:** Overview of hybrid development in JET with ITER-Like Wall
Name of the conference: 42nd EPS Conference on Plasma Physics
Date of event: 2015
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D Frigione; C Challis; J Garcia; J Hobirk; B Alper; G Artaserse; M Baruzzo; E Belonohy; A Brett; P Buratti; others.

16 **Title of the work:** Pedestal MHD stability at JET--an experimentalist's view
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C Perez von Thun; L Frassinetti; M Beurskens; S Saarelma; I Lupelli; M Leyland; J Flanagan; C Giroud; M Tsalas; J Boom; others.

17 **Title of the work:** The relation between divertor conditions and the LH threshold on JET
Name of the conference: 42nd EPS Conference on Plasma Physics
Date of event: 2015
Organising entity: European Physical Society
E Delabie; CF Maggi; H Meyer; TM Biewer; C Bourdelle; M Brix; I Carvalho; AV Chankin; P Drewelow; C Guillemaut; others.

18 **Title of the work:** Effect of baseline and hybrid operational parameters on plasma confinement and stability in JET with a Be/W ITER-Like Wall
Name of the conference: 41st EPS Conference on Plasma Physics
Date of event: 2014
J Mailloux; M Beurskens; I Chapman; I Nunes; B Alper; M Baruzzo; PSA Belo; E Belonohy; J Bernardo; P Buratti; others.

19 **Title of the work:** Effect of fuelling location on pedestal and ELMs in JET
Name of the conference: 41st EPS Conference on Plasma Physics
Date of event: 2014
Emilia R Solano; EA Autricque; I Coffey; E Delabie; E de la Luna; P Drewelow; E Lerche; L Frassinetti; M Clever; I Nunes; others.

20 **Title of the work:** Impact of divertor geometry on ITER scenarios performance in the JET metallic wall
Name of the conference: 25th IAEA Fusion Energy Conference (FEC 2014)
Date of event: 2014
E Joffrin; J Garcia; P Tamain; E Belonohy; H Bufferand; P Buratti; C Challis; E Delabie; P Drewelow; D Dodt; others.

21 **Title of the work:** Investigation of the influence of divertor recycling on global plasma confinement in JET
Name of the conference: 21st International Conference on Plasma Surface Interactions 2014 (PSI 21)
Date of event: 2014
P Tamain; E Joffrin; H Bufferand; S Brezinsek; M Beurskens; G Ciraolo; M Clever; C Giroud; R Dejarnac; P Drewelow; others.

22 **Title of the work:** LH Transitions on JET with the ITER-like Wall
Name of the conference: 19th Joint EU-US Transport Task Force Meeting (TTF 2014)
Date of event: 2014
End date: 2014

E Delabie; CF Maggi; H Meyer; TM Biewer; C Bourdelle; M Brix; I Carvalho; P Drewelow; NC Hawkes; J Hillesheim; others.

23 **Title of the work:** Overview and interpretation of L-H threshold experiments on JET with the iter-like wall
Name of the conference: 25th IAEA Fusion Energy Conference (FEC 2014)
Date of event: 2014
E Delabie; C Maggi; H Meyer; TM Biewer; C Bourdelle; M Brix; IS Carvalho; M Clever; P Drewelow; N Hawkes; others.

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Name of the conference: 28th Symposium on Fusion Technology (SOFT 2014)
Date of event: 2014
Type of contribution: Scientific book or monograph
E Belonohy; P Abreu; M Beurskens; J Boom; M Brix; J Flanagan; S Gerasimov; M Kempenaars; E de la Luna; I Lupelli; others. 2014.

25 **Title of the work:** Tungsten sources and transport control in JET-ILW H-modes
Name of the conference: 21st International Conference on Plasma Surface Interactions 2014 (PSI 21)
Date of event: 2014
N Fedorczak; P Monier-Garbet; S Brezinsek; M Goniche; E Joffrin; E Lerche; B Lipschultz; E Luna; G Maddison; C Maggi; others.

26 **Title of the work:** Dynamic of density profiles in JET during slow LH transition
Date of event: 2013
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
R Sabot; Ph Ghendrih; A Sirinelli; P Tamain; C Bourdelle; M Brix; G Calabro; E Delabie; G Dif-Pradalier; N Fedorzack; others. "40th EPS Conference on Plasma Physics". 2013.

27 **Title of the work:** Experimental study of HL transitions in JET
Name of the conference: 40th EPS Conference on Plasma Physics
Date of event: 2013
Organising entity: European Physical Society
CF Maggi; E Delabie; N Hawkes; M Lehnen; G Calabro; F Rimini; ER Solano; JET EFDA Contributors.

28 **Title of the work:** Characterization of ion cyclotron resonance heating in presence of the ITER-like wall in JET
Date of event: 2012
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
D Van Eester; E Lerche; P Jacquet; V Bobkov; A Czarnecka; JW Coenen; L Colas; Kristel Cromb{\'e}; M Graham; S Jachmich; others. "39th European Physical Society Conference on Plasma Physics (EPS-2012)/16th International Congress on Plasma Physics (ICPP-2012)". 36, 2012.

29 **Title of the work:** LH power threshold, confinement, and pedestal stability in JET with a metallic wall
Date of event: 2012
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Type of contribution: Scientific book or monograph
MNA Beurskens; L Frassinetti; C Maggi; G Calabro; B Alper; C Angioni; C Bourdelle; S Brezinsek; P Buratti; C Challis; others. "24th IAEA Fusion Energy Conference 2012". 2013.

30 **Title of the work:** ELM size analysis in JET advanced tokamak and hybrid scenarios
Date of event: 2010
Type of contribution: Scientific book or monograph
D Zarzoso; MNA Beurskens; Lorenzo Frassinetti; T Eich; E Joffrin; A Loarte; G Maddison; FG Rimini; G Saibene; ER Solano; others. "37th EPS Conference on Plasma Physics 2010, EPS 2010, 21 June 2010 through 25 June 2010, Dublin, Ireland". pp. 922 - 925. 2010.

31 **Title of the work:** 3D MHD Equilibrium Calculations for Tokamaks with the HINT2 Code
Date of event: 2009
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
C Wiegmann; Y Suzuki; J Geiger; ER Solano; Y Liang; Y Sun; D Reiter; RC Wolf; others. "36th EPS Conference on Plasma Physics". 2009.

32 **Title of the work:** ELMs, plasma current loss and strike point movements
Date of event: 2002
Type of contribution: Scientific book or monograph
ER Solano; F Villone; P Andrew; Y Corre; T Eich; A Loarte. "APS Meeting Abstracts". 1, pp. 1005 - 1005. 2002.

33 **Title of the work:** JET-EP: the JET Enhancement Project
Name of the conference: 42nd Annual Meeting of the APS Division of Plasma Physics
City of event: Quebec, Canada
Date of event: 23/10/2000
Type of contribution: Scientific book or monograph
Jerome Pamela; Emilia Solano. "APS Meeting Abstracts". 1, pp. 1010 - 1010. 2000.

34 **Title of the work:** Current Balance Analysis at the W7-AS Stellarator
Date of event: 1999
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
C Wendland; U Gasparino; H Maa{\ss}berg; ER Solano; others. "26th EPS Conference on Controlled Fusion and Plasma Physics". 1999.

35 **Title of the work:** Steady State Bifurcations in Tokamaks
Date of event: 1998
ER Solano. "APS Division of Plasma Physics Meeting Abstracts". 1,

36 **Title of the work:** H-mode and Density Limit Operational Space for ITER
Date of event: 1997
Type of contribution: Scientific book or monograph
D Post; A Hubbard; Y Igitkhanov; G Janeschitz; J Lingertat; A Loarte; O Pogutse; G Pacher; H Pacher; E Solano; others. "APS Meeting Abstracts". 1, 1997.

37 **Title of the work:** Characterization of Divertor Asymmetries in TEXT-Upgrade: Simulation and Experiment
Date of event: 1996
X Bonnin; WL Rowan; RD Bengtson; JL Craig; KW Gentle; ER Solano; DJ Storek; DL Winslow. "APS Division of Plasma Physics Meeting Abstracts". 1,

38 **Title of the work:** Comparative analysis of density profile and magnetic signals during the JET M-mode and ASDEX Upgrade I-phase phenomena
Organising entity: European Physical Society

Type of contribution: Scientific book or monograph
DI Refy; ER Solano; N Vianello; S Zoletnik; D Dunai; B Tal; M Brix; R Gomes; G Birkenmeier; E Wolfrum; others. "43rd EPS Conference on Plasma Physics". 2016.

39 **Title of the work:** Comparative edge-SOL density profile and turbulence measurements during the I-phase in JET, ASDEX, COMPASS and EAST
Type of contribution: Scientific book or monograph
DI Refy; ER Solano; N Vianello; S Zoletnik; D Dunai; B Tal; M Brix; R Gomes; E Wolfrum; G Birkenmeier; others. "Workshop on Electric Fields, Turbulence and Self-Organisation in Magnetized Plasmas (EFTSOMP 2018). Satellite Meeting of the EPS Plasma Physics Conference". 2018.

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Type of contribution: Scientific book or monograph
E De la Luna; P Lomas; S Saarelma; I Nunes; L Frassinetti; S Bresinzek; S Weisen; M Beurskens; J Flanagan; M Groth; others. "25th IAEA Int. Conf. on Fusion Energy (St. Petersburg)". 2014.

41 **Title of the work:** Comparison of Particle Transport and Confinement Properties between the ICRH and NBI Heated Dimensionless Identity Plasmas on JET
Type of contribution: Scientific book or monograph
Tuomas Tala; Antti Salmi; J Citrin; ER Solano; RB Morales; I Carvalho; A Czarnecka; E Delabie; Frida Eriksson; J Ferreira; others. "28th IAEA Fusion Energy Conference (FEC 2020)". 2021.

42 **Title of the work:** Development of a QH-mode scenario on ASDEX Upgrade
Type of contribution: Scientific book or monograph
Eleonora Viezzer; Joerg Hobirk; Emilia Solano; Hendrik Meyer; Pilar Cano; Marco Cavedon; Diego Cruz; Mike Dunne; Javier Gonzalez; Tim Happel; others. "APS Division of Plasma Physics Meeting Abstracts". 2019, pp. YP10 - 040. 2019.

43 **Title of the work:** Dynamic of density profiles in JET during slow LH transition
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
R Sabot; Ph Ghendrih; A Sirinelli; P Tamain; C Bourdelle; M Brix; G Calabro; E Delabie; G Dif-Pradalier; N Fedorzack; others. "40th EPS Conference on Plasma Physics". 2013.

44 **Title of the work:** Effect of fuelling location on pedestal and ELMs in JET
Type of contribution: Scientific book or monograph
RE Solano; EA Autricque; I Coffey; E Delabie; E Luna; P Drewelow; E Lerche; L Frassinetti; M Clever; I Nunes; others. "41st EPS Conference on Plasma Physics". 2014.

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Type of contribution: Scientific book or monograph
J Mailloux; M Beurskens; I Chapman; I Nunes; B Alper; M Baruzzo; PSA Belo; E Belonohy; J Bernardo; P Buratti; others. "41st EPS Conference on Plasma Physics". 2014.

46 **Title of the work:** Effects of external 3D fields on the core of high-beta hybrid tokamak plasmas
Type of contribution: Scientific book or monograph
Paolo Piovesan; L Marrelli; L Pigatto; D Terranova; T Bolzonella; V Igochine; M Sertoli; C Angioni; A Bock; A Gude; others. "APS Division of Plasma Physics Meeting Abstracts". 2017, pp. UP11 - 077. 2017.

47 **Title of the work:** Experimental characterization of M-Mode in JET tokamak
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
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48 **Title of the work:** Experimental study of HL transitions in JET
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
CF Maggi; E Delabie; N Hawkes; M Lehnen; G Calabro; F Rimini; ER Solano; JET EFDA Contributors. "40th EPS Conference on Plasma Physics". 2013.

49 **Title of the work:** H-mode and LH threshold experiments during ITER-like plasma current ramp up/down at JET with ILW
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
G Calabro; GMD Hogeweij; CF Maggi; N Hawkes; E Joffrin; A Loarte; ACC Sips; FG Rimini; E Barbato; M Baruzzo; others. "40th EPS Conference on Plasma Physics". 2013.

50 **Title of the work:** Helium LH transition threshold studies in JET-ILW
Type of contribution: Scientific book or monograph
Emilia R Solano; M Maslov; E Delabie; G Birkenmeier; I Jepu; A Shaw; J Hillesheim; JET Contributors Team. "APS Division of Plasma Physics Meeting Abstracts". 2019, pp. PO5 - 002. 2019.

51 **Title of the work:** ICRH and NBI Heated Dimensionless Identity Plasmas on JET
Type of contribution: Scientific book or monograph
T Tala; A Salmi; ER Solano; RB Morales; IS Carvalho; J Citrin; A Chomiczewska Czarnecka; E Delabie; F Eriksson; J Ferreira; others. "47th EPS Conference on Plasma Physics". 2021.

52 **Title of the work:** Impact of divertor geometry on ITER scenarios performance in the JET metallic wall
Type of contribution: Scientific book or monograph
E Joffrin; J Garcia; P Tamain; E Belonohy; H Bufferand; P Buratti; C Challis; E Delabie; P Drewelow; D Dodt; others. "25th IAEA Fusion Energy Conference (FEC 2014)". 2014.

53 **Title of the work:** Impact of neon seeding on fusion performance in JET ILW hybrid plasmas
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
CD Challis; E Belonohy; A Czarnecka; D Frigione; C Giroud; J Graves; J Hobirk; A Huber; E Joffrin; N Krawczyk; others. "44th EPS Conference on Plasma Physics". 2017.

54 **Title of the work:** Implications of JET-ILW LH transition studies for ITER
Type of contribution: Scientific book or monograph
JC Hillesheim; E Delabie; E Solano; CF Maggi; H Meyer; E Belonohy; I Carvalho; E de la Luna; A Drenik; M Gelfusa; others. "27th IAEA Fusion Energy Conference". 2018.

55 **Title of the work:** Integrated core+ edge+ SOL+ MHD modelling of ELM mitigation at JET
Type of contribution: Scientific book or monograph
F Koechl; R Albanese; R Ambrosino; E Militello-Asp; P Belo; G Corrigan; L Garzotti; D Harting; G Huysmans; T Koskela; others. "40th EPS Conference on Plasma Physics, EPS 2013". pp. 954 - 957. 2013.

56 **Title of the work:** JET-ILW LH transitions in Helium
Type of contribution: Scientific book or monograph
ER Solano; E Delabie; G Birkenmeier; C Silva; J Hillesheim; S Aleiferis; A Baciero; I Balboa; A Boboc; IS Carvalho; others. "47th EPS Conference on Plasma Physics". 2021.

57 **Title of the work:** Joint experiments tailoring the plasma evolution to maximise pedestal performance
Type of contribution: Scientific book or monograph
IT Chapman; A Merle; S Saarelma; R Cesario; S Coda; JW Connor; E de la Luna; R Fisher; L Garzotti; CJ Ham; others. "Proc. 26th IAEA Fusion Energy Conference, pages EX/3--6, Kyoto, Japan". 2016.

58 **Title of the work:** LH Transition Studies at JET: H, D, He and T
Type of contribution: Scientific book or monograph
ER Solano; G Birkenmeier; E Delabie; C Silva; J Hillesheim; S Aleiferis; A Baciero; I Balboa; A Boboc; C Bourdelle; others. "28th IAEA Fusion Energy Conference (FEC 2020)". 2021.

59 **Title of the work:** LH power threshold, confinement, and pedestal stability in JET with a metallic wall
Organising entity: International Atomic Energy Agency
Type of contribution: Scientific book or monograph
MNA Beurskens; L Frassinetti; C Maggi; G Calabro; B Alper; C Angioni; C Bourdelle; S Brezinsek; P Buratti; C Challis; others. "24th IAEA Fusion Energy Conference 2012". 2013.

60 **Title of the work:** LH threshold results in hydrogen plasmas in JET-ILW
Type of contribution: Scientific book or monograph
E Delabie; C Maggi; E Solano; H Meyer; E Lerche; D Keeling; JET Contributors Team. "APS Division of Plasma Physics Meeting Abstracts". 2015, pp. GP12 - 126. 2015.

61 **Title of the work:** LH transition studies in JET-ILW
Type of contribution: Scientific book or monograph
Er Solano; E Delabie; J Hillesheim; C Maggi; N Vianello; I Carvalho; A Huber; E Lerche; JET Contributors Team. "APS Division of Plasma Physics Meeting Abstracts". 2017, pp. UP11 - 075. 2017.

62 **Title of the work:** LH transition studies in hydrogen and mixed ion species plasmas in JET
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
JC Hillesheim; E Delabie; ER Solano; IS Carvalho; A Drenik; C Giroud; A Huber; E Lerche; B Lomanowski; M Mantsinen; others. "44th EPS Conference on Plasma Physics". 2017.

63 **Title of the work:** LH transitions on JET with the ITER-like Wall
Type of contribution: Scientific book or monograph
E Delabie; CF Maggi; H Meyer; TM Biewer; C Bourdelle; M Brix; I Carvalho; P Drewelow; NC Hawkes; J Hillesheim; others. "19th Joint EU-US Transport Task Force Meeting". 2014.

64 **Title of the work:** M-mode: axi-symmetric magnetic oscillation and ELM-less H-mode in JET
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
Emilia R Solano; N Vianello; P Buratti; B Alper; R Coelho; E Delabie; S Devaux; D Dodt; A Figueiredo; Lorenzo Frassinetti; others. "40th EPS Conference on Plasma Physics". 2013.

65 **Title of the work:** Magnetic Oscillations near LH transition: experimental observations and comparisons with MHD theory
Type of contribution: Scientific book or monograph

ER Solano; N Vianello; E Delabie; D Refy; S Zoletnik; J Hilllesheim; P Buratti; B Sieglin; R Coelho; JET Contributors. "15th International Workshop on H-Mode and Transport Barrier Physics". 2015.

66 **Title of the work:** Mixed Hydrogen-Deuterium plasmas on JET ILW: H-mode confinement and isotope mixture control
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
DB King; E Viezzer; M Baruzzo; E Belonohy; J Buchanan; I Carvalho; K Cave-Ayland; I Coffey; CD Challis; EG Delabie; others. "44th EPS Conference on Plasma Physics". 2017.

67 **Title of the work:** Modelling of combined ICRF and NBI heating in JET hybrid plasmas
Organising entity: EDP Sciences
Type of contribution: Scientific book or monograph
Dani Gallart; Mervi Mantsinen; Clive Challis; Domenico Frigione; Jonathan Graves; Joerg Hobirk; Eva Belonohy; Agata Czarnecka; Jacob Eriksson; Marc Goniche; others. "EPJ Web of Conferences". 157, pp. 03015 - 03015. 2017.

68 **Title of the work:** Optimising the use of ICRF waves in JET hybrid plasmas for high fusion yield
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
MJ Mantsinen; D Gallart; E Belonohy; C Challis; A Czarnecka; J Eriksson; D Frigione; J Graves; M Goniche; C Hellesen; others. "44th EPS Conference on Plasma Physics". 2017.

69 **Title of the work:** Overview and interpretation of lh threshold experiments on jet with the iter-like wall
Organising entity: International Atomic Energy Agency IAEA
Type of contribution: Scientific book or monograph
E Delabie; C Maggi; H Meyer; TM Biewer; C Bourdelle; M Brix; IS Carvalho; M Cleber; P Drewelow; N Hawkes; others. "25th Fusion Energy Conference, IAEA FEC 2014". pp. EX - P5. 2014.

70 **Title of the work:** Pedestal MHD stability at JET--an experimentalist's view
Type of contribution: Scientific book or monograph
C Perez von Thun; Lorenzo Frassinetti; M Beurskens; S Saarelma; I Lupelli; M Leyland; J Flanagan; C Giroud; M Tsalas; J Boom; others. "15th International Workshop on H-Mode and Transport Barrier Physics". 2015.

71 **Title of the work:** Plasma preparation for-particle excitation of TAEs in JET DT plasmas
Type of contribution: Scientific book or monograph
J Mailloux; CD Challis; M Fitzgerald; C Giroud; N Hawkes; P Jacquet; D Keeling; D King; V Kiptily; S Menmuir; others. "44th EPS Conference on Plasma Physics, EPS 2017". pp. O3 - 109. 2017.

72 **Title of the work:** Post-ablation evolution of the tungsten VUV/XUV spectra in JET
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
E Pawelec; SS Henderson; MG O'Mullane; ER Solano; A Huber; A Baciero; J Boom; I Coffey; J Flanagan; S Jachmich; others. "44th EPS Conference on Plasma Physics". 2017.

73 **Title of the work:** Preliminary interpretation of the isotope effect on energy confinement in Ohmic discharges in JET-ILW
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
E Delabie; MMF Nave; M Baruzzo; J Bernardo; J Boom; J Buchanan; N Hawkes; JC Hillesheim; CF Maggi; S Menmuir; others. "44th EPS Conference on Plasma Physics". 2017.

74 **Title of the work:** Progress towards a quiescent, high confinement regime for the all-metal ASDEX Upgrade tokamak
Type of contribution: Scientific book or monograph
E Viezzer; J Hobirk; P Cano-Megias; E Solano; H Meyer; R Bielajew; M Cavedon; D Cruz-Zabala; MG Dunne; J Gonzalez-Martin; others. "47th EPS Conference on Plasma Physics". 2020.

75 **Title of the work:** Recent advances on stationary no-ELM and small-ELM regimes
Type of contribution: Scientific book or monograph
E Viezzer; P Cano-Megias; DJ Cruz-Zabala; M Faitsch; L Gil; T Happel; G Harrer; A Hubbard; A Kallenbach; A Merle; others. "25th Joint EU-US Transport Task Force Meeting". 2021.

76 **Title of the work:** Role of stationary zonal flows and momentum transport for L--H transitions in JET
Type of contribution: Scientific book or monograph
JC Hillesheim; E Delabie; ER Solano; F Rimini; J Hobirk; M Barnes; J Buchanan; CF Maggi; H Meyer; L Meneses; others. "Preprint: 2016 IAEA Fusion Energy Conference, Kyoto [EX/5-2]". 2016.

77 **Title of the work:** S8 Modelling of ELM mitigation at JET
Type of contribution: Scientific book or monograph
F Koechl; R Albanese; R Ambrosino; G Corrigan; L Garzotti; H-S Kim; J L{\"o}nnroth; PT Lang; E Luna; M Mattei; others. "27th Symposium on Plasma Physics and Technology". 2016.

78 **Title of the work:** Scenario preparation for the observation of alpha-driven instabilities and transport of alpha particles in JET DT plasmas
Type of contribution: Scientific book or monograph
R Dumont; D Keeling; M Fitzgerald; C Challis; N Fil; C Giroud; N Hawkes; V Kiptily; M Lennholm; J Mailloux; others. "FEC IAEA 2020-28th IAEA Fusion Energy Conference". 2021.

79 **Title of the work:** The effect of the accuracy of toroidal field measurements on spatial consistency of kinetic profiles at JET
Type of contribution: Scientific book or monograph
E Belonohy; P Abreu; M Beurskens; J Boom; M Brix; J Flanagan; S Gerasimov; M Kempenaars; E de la Luna; I Lupelli; others. "28th Symposium on Fusion Technology (SOFT 2014)". 2014.

80 **Title of the work:** The low density type III ELMy H-mode regime on JET-ILW: a low density H-mode compatible with a tungsten divertor?
Type of contribution: Scientific book or monograph
E Delabie; JC Hillesheim; J Mailloux; CF Maggi; F Rimini; ER Solano; JET contributors Team. "APS Division of Plasma Physics Meeting Abstracts". 2016, pp. BP10 - 052. 2016.

81 **Title of the work:** The relation between divertor conditions and the LH threshold on JET
Organising entity: European Physical Society
Type of contribution: Scientific book or monograph
E Delabie; AV Chankin; CF Maggi; H Meyer; Theodore M Biewer; C Bourdelle; M Brix; I Carvalho; P Drewelow; C Guillemaut; others. "42nd EPS Conference on Plasma Physics". 2015.

82 **Title of the work:** The role of combined ICRF and NBI heating in JET hybrid plasmas in quest for high DT fusion yield
Organising entity: EDP Sciences
Type of contribution: Scientific book or monograph

Mervi Mantsinen; Clive Challis; Domenico Frigione; Jonathan Graves; Joerg Hobirk; Eva Belonohy; Agata Czarnecka; Jacob Eriksson; Dani Gallart; Marc Goniche; others. "EPJ Web of Conferences". 157, pp. 03032 - 03032. 2017.

83 **Title of the work:** Tungsten sources and transport control in JET-ILW H-modes
Type of contribution: Scientific book or monograph
N Fedorczak; P Monier-Garbet; S Brezinsek; M Goniche; E Joffrin; E Lerche; B Lipschultz; E Luna; G Maddison; C Maggi; others. "21st International Conference on Plasma Surface Interactions 2014 (PSI 21)". 2014.

84 **Title of the work:** Validation of reduced-order turbulence modelling in L-mode near-edge
Type of contribution: Scientific book or monograph
G Snoep; J Citrin; C Bourdelle; F Jenko; A Ho; M Marin; E Delabie; MJ Pueschel; ER Solano; CD Stephens; others. "47th EPS Conference on Plasma Physics". 2021.

Other dissemination activities

1 **Title of the work:** Científicas españolas lideran experimentos de fusión históricos
Name of the event: Noticias CIEMAT
Type of event: News web page
Corresponding author: Yes
Date of event: 09/02/2022
R. Solano 1. "https://www.ciemat.es/portal.do?IDM=61&NM=2&identificador=2147".

2 **Title of the work:** Video de Divulgación de los resultados de la Campaña DT de JET
Name of the event: Divulgación de los resultados de la Campaña DT de JET
Type of event: Explanatory video
Corresponding author: Yes
City of event: Madrid, Spain
Date of event: 09/02/2022
Organising entity: CIEMAT and EUROfusion
R. Solano 1. "https://www.youtube.com/watch?v=hlqCVk2PP04".

3 **Title of the work:** ¿Se puede convertir el plasma en sólido, líquido o gas?
Type of event: Media interviews
Corresponding author: Yes
City of event: Spain
Date of event: 23/01/2019
Organising entity: Diario El País, S.L. **Type of entity:** Business
Emilia R Solano. "¿Se puede convertir el plasma en sólido, líquido o gas?".

4 **Title of the work:** Informe de divulgacion: Introduction to Fusion Research at JET
Date of event: 01/12/1999

5 **Title of the work:** Visitas guiadas al TJ-II, a lo largo de 2005 a 2020
Type of event: Fairs and exhibitions
City of event: Madrid, Community of Madrid, Spain
Organising entity: Laboratorio Nacional de Fusion, CIEMAT

R&D management and participation in scientific committees

Scientific, technical and/or assessment committees

1 **Committee title:** Landau-Spitzer Award Selection Committee,
Primary (UNESCO code): 220410 - Plasmas (physics of)
Affiliation entity: American Physical Society and European Physical Society
Start-End date: 2017 - 2019

2 **Committee title:** Nature Awards for Mentoring in Science
Affiliation entity: Nature Journal **Type of entity:** Business
City affiliation entity: Londres, United Kingdom
Start-End date: 2017 - 2017

3 **Committee title:** Alternate Concepts panel of the Science Subcommittee
City: United States of America
Affiliation entity: Office of Fusion Energy, Department of Energy, USA
City affiliation entity: United States of America
Start-End date: 12/1995 - 06/1996

4 **Committee title:** Science Subcommittee of the Consultative Committee for Fusion Energy (FEAD)
City: United States of America
Affiliation entity: Office of Fusion Energy, Department of Energy, USA
City affiliation entity: United States of America
Start-End date: 12/1995 - 06/1996

5 **Committee title:** Selection Committee of National Undergraduate Fellowship Program
Affiliation entity: University Fusion Associaton and Princeton University Plasma Physics Laboratory
Start-End date: 1994 - 1994

Organization of R&D activities

1 **Title of the activity:** Member of Programme Committe, Magnetic Cinfinement Fusion
Type of activity: Selection of speakers for invited and oral talks, organisation of 1st Women in Plasma Physics Meeting at the EPS Conference.
Convening entity: European Physical Society, Division of Plasma Physics
Start-End date: 07/2023 - 07/2024

2 **Title of the activity:** Scientific Coordinator of Experiments in JET
Type of activity: Organization, execution and analysis of experiments in JET
Convening entity: EUROfusion **Type of entity:** Public Research Body
Start-End date: 2016 - 2024 **Duration:** 5 years

3 **Title of the activity:** EPS-DPP Board Member, elected position
Type of activity: Organisation of the annual EPS Conference on Controlled Fusion and Plasma Physics: selection of Programme Committe, oversight of conference.
Convening entity: European Physical Society, Division of Plasma Physics
Start-End date: 2012 - 2020

4 **Title of the activity:** Scientific Coordinator of Experiments in JET
Type of activity: Organization, execution and analysis of experiments in JET
Convening entity: EFDA **Type of entity:** Public Research Body
Start-End date: 2011 - 2012 **Duration:** 2 years

5 **Title of the activity:** Plasma Physics and Controlled Fusion
Type of activity: Member of Editorial Board
Convening entity: Institute of Physics, UK
Start-End date: 2005 - 2008

6 **Title of the activity:** Chair of Magnetic Confinement Group of Programme Committe
Type of activity: Selection of speakers for invited and oral talks, organisation of 1st Women in Plasma Physics Meeting at the EPS Conference.
Convening entity: European Physical Society, Division of Plasma Physics
Start-End date: 2003 - 07/2004

7 **Title of the activity:** Alternate Concepts panel of the Science Subcommittee
Type of activity: strategy for alternate concepts in the magnetic confinement fusion programme in the USA.
Convening entity: Office of Fusion Energy, Department of Energy, USA
Start-End date: 12/1995 - 06/1996

8 **Title of the activity:** Science Subcommittee of the Consultative Committee for Fusion Energy (FEAD)
Type of activity: Advise the Department of Energy on strategy for the magnetic confinement fusion programme in the USA.
Convening entity: Office of Fusion Energy, Department of Energy, USA
Start-End date: 12/1995 - 06/1996

R&D management

1 **Name of the activity:** JET Physics Programme
Type of management: Programme management
Performed tasks: Responsible Officer for JET Physics Programme: coordination of researchers and data validation, writing of Annual Report
Entity: EUROfusion
Start date: 01/2015 **Duration:** 1 year - 10 months

2 **Name of the activity:** JET Enhancements Department
Type of management: Programme management
Performed tasks: Diagnostic Responsible Officer, coordination of diagnostitians, project manegemnt of Diagnostic Enhancement projects, Data Validation.
Entity: JET EFDA CSU
Start date: 03/2013 **Duration:** 1 year - 9 months

3 **Name of the activity:** Scientific Assistant to JET EFDA Leader
Type of management: Programme management
Performed tasks: Chair of JET EFDA Seminars; Coordination of JET TFLs and researchers for writing the JET-EP proposal. Led team to write long term physics programme to accompany enhancement proposal..
Entity: JET EFDA CSU **Type of entity:** Public Research Body
Start date: 01/2000 **Duration:** 3 years

Target group profile: Public agencies funding R&D&I
Specific tasks: Elaboracion de programa de investigacion de JET a largo plazo, necesario para motivar el proyecto de mejoras JET-Enhancement Project.

Other achievements

Stays in public or private R&D centres

1 **Entity:** AUG, IPP, MPI **Type of entity:** Public Research Body
Faculty, institute or centre: AUG
City of entity: Garching, Germany
Start-End date: 02/03/2019 - 15/03/2019 **Duration:** 14 days
Funding entity: EUROFusion
Goals of the stay: Guest
Provable tasks: Research of QH mode, with E Viezzer

2 **Entity:** DIII-D, General Atomics **Type of entity:** R&D Centre
Faculty, institute or centre: DIII-D
City of entity: San Diego, United States of America
Start-End date: 11/2017 - 12/2017 **Duration:** 1 month
Goals of the stay: Guest
Provable tasks: Study of QH mode and EHO, with K Burrell
Relevant results: Comparison of JET Outer Mode and DIII-D Edge Harmonic Oscillation, with K. Burrell

3 **Entity:** DIII-D, General Atomics **Type of entity:** R&D Centre
Faculty, institute or centre: DIII-D
City of entity: San Diego, United States of America
Start-End date: 04/2017 - 04/2017 **Duration:** 1 month
Goals of the stay: Guest
Provable tasks: Study of QH mode and EHO, with K Burrell
Relevant results: Scoping study to compare JET Outer Mode and DIII-D Edge Harmonic Oscillation, with K. Burrell

4 **Entity:** JET, EuroFusion **Type of entity:** R&D Centre
City of entity: Abingdon, United Kingdom
Start-End date: 11/2015 - 09/2016 **Duration:** 11 months
Funding entity: EUROFusion
Name of programme: JET
Goals of the stay: Research
Provable tasks: Research
Relevant results: Studies of L-H transition, W radiation in pedestal, equilibrium reconstruction

5 **Entity:** JET, EuroFusion
City of entity: Abingdon, United Kingdom
Start-End date: 01/2015 - 10/2015 **Duration:** 7 months
Funding entity: EUROFusion
Goals of the stay: Seconded from CIEMAT
Provable tasks: Scientific Managment, JET RO
Relevant results: Studies of L-H transition, W radiation in pedestal, equilibrium reconstruction

6 **Entity:** JET, Eurofusion **Type of entity:** Public Research Body
Faculty, institute or centre: PMU
City of entity: Abingdon, United Kingdom
Start-End date: 01/2014 - 10/2015 **Duration:** 1 year - 10 months
Funding entity: EUROFusion
Goals of the stay: I+D Management
Provable tasks: Data Validation, Diagnostic Coordinator, equilibrium, pedestal, ELM and MHD expertise.
Relevant results: Studies of equilibrium reconstruction

7 **Entity:** JET, EFDA
Faculty, institute or centre: Hospital Universitari de Bellvitge
City of entity: Abingdon, United Kingdom
Start-End date: 03/2013 - 12/2014 **Duration:** 1 year - 9 months
Funding entity: EUROFusion
Goals of the stay: I+D Management
Provable tasks: Data Validation, Diagnostic Coordinator, equilibrium, pedestal, ELM and MHD expertise.
Relevant results: Studies of equilibrium reconstruction

8 **Entity:** General Atomics
City of entity: San Diego, United States of America
Start-End date: 01/2011 - 02/2011
Goals of the stay: Guest
Relevant results: Scoping study to compare JET Outer Mode and DIII-D Edge Harmonic Oscillation, with K. Burrell

9 **Entity:** University of Texas at Austin **Type of entity:** University
Faculty, institute or centre: Institute for Fusion Studies
City of entity: Austin, United States of America
Start-End date: 12/2010 - 12/2010 **Duration:** 1 month
Goals of the stay: Guest
Relevant results: Study of criticality theory and plasma phase transitions

10 **Entity:** JET Operating Contract
City of entity: Culham, United Kingdom
Start-End date: 07/2007 - 04/2010 **Duration:** 2 years - 10 months
Goals of the stay: Contracted
Relevant results: improvement of equilibrium reconstruction at JET, ELM studies, transport barrier studies.

11 **Entity:** University of Texas at Austin **Type of entity:** University
Faculty, institute or centre: Institute for Fusion Studies
City of entity: Austin, United States of America
Start-End date: 02/2008 - 03/2008 **Duration:** 2 months
Goals of the stay: Guest
Provable tasks: study of criticality theory and plasma phase transitions
Relevant results: Study of criticality theory and plasma phase transitions

12 **Entity:** General Atomics **Type of entity:** R&D Centre
City of entity: San Diego, United States of America
Start-End date: 05/2007 - 06/2007 **Duration:** 1 month
Goals of the stay: Guest

Provable tasks: presentation of JETstrike point jumps and of theory results, collaboration on EFIT
Relevant results: Experimental study of current holes in DIII-D.

13 **Entity:** University of Texas at Austin **Type of entity:** University
Faculty, institute or centre: Institute for Fusion Studies
City of entity: Austin, United States of America
Start-End date: 04/2007 - 05/2007 **Duration:** 1 month
Goals of the stay: Guest

14 **Entity:** Australian National University **Type of entity:** University
Faculty, institute or centre: Physics Department, Discovery Grant
City of entity: Canberra, Australia
Start-End date: 10/2006 - 12/2006 **Duration:** 2 months - 20 days
Goals of the stay: Guest
Provable tasks: study of criticality theory

15 **Entity:** General Atomics
City of entity: San Diego, United States of America
Start-End date: 07/2004 - 08/2004
Goals of the stay: Guest
Relevant results: Experimental study of current holes in DIII-D.

16 **Entity:** EFDA **Type of entity:** Public Research Body
Faculty, institute or centre: JET
City of entity: Abingdon, United Kingdom
Start-End date: 02/2003 - 03/2003 **Duration:** 2 months
Goals of the stay: Seconded from CIEMAT, contracted
Provable tasks: experimental study of ELMs and current holes in JET

17 **Entity:** JET **Type of entity:** R&D Centre
Faculty, institute or centre: EFDA CSU
City of entity: Abingdon, United Kingdom
Start-End date: 02/1999 - 12/2002 **Duration:** 3 years - 10 months
Goals of the stay: Seconded from CIEMAT, contracted
Provable tasks: Scientific assistance to JET director.

18 **Entity:** ITER Central Team **Type of entity:** Public Research Body
Faculty, institute or centre: Garching ITER Office
City of entity: Garching, Germany
Start-End date: 05/1997 - 11/1998 **Duration:** 1 year - 5 months
Goals of the stay: Guest
Provable tasks: study of edge plasmas for ITER and calculation of neoclassical transport for W7AS

19 **Entity:** Max Plank Institute **Type of entity:** R&D Centre
Faculty, institute or centre: Institut fur Plasmaphysick
City of entity: Garching, Germany
Start-End date: 05/1997 - 11/1998 **Duration:** 1 year - 5 months
Goals of the stay: Guest
Provable tasks: study of edge plasmas for ITER and calculation of neoclassical transport for W7AS

20 **Entity:** University of Texas **Type of entity:** University
Faculty, institute or centre: Fusion Research Center
City of entity: Austin, United States of America
Start-End date: 05/1987 - 06/1996 **Duration:** 9 years
Goals of the stay: Post-doctoral
Provable tasks: design of theTEXT-Upgrade tokamak, studies of equilibium, stability and control of plasma, studies on neoclassical transport in tokamaks

21 **Entity:** Oak Ridge National Laboratory **Type of entity:** R&D Centre
Faculty, institute or centre: Fusion Energy Division
City of entity: Oak Ridge, United States of America
Start-End date: 03/1985 - 03/1986 **Duration:** 1 year
Goals of the stay: Doctorate
Provable tasks: : calculation of neoclassical transport coefficients for the TJ-II fusion research device

Obtained grants and scholarships

1 **Name of the grant:** Visiting Fellowship under Discovery Grant
Aims: Investigación
Awarding entity: The Australian University
Conferral date: 25/08/2006 **Duration:** 2 months - 20 days
End date: 19/12/2006
Entity where activity was carried out: Department of Theoretical Physics, Australian National University

2 **Name of the grant:** Beca Ramón y Cajal
Aims: Reincorporación de científicos del extranjero
Awarding entity: Ministerio de Ciencia y Tecnología
Conferral date: 2001 **Duration:** 2 years - 9 months
End date: 05/2005
Entity where activity was carried out: Laboratorio Nacional de Fusión, CIEMAT

3 **Name of the grant:** Beca pre-doctoral en la Junta de Energía Nuclear
Aims: Pre-doctoral
Awarding entity: Instituto de Estudios Nucleares **Type of entity:** Public Research Body
Conferral date: 01/10/1983 **Duration:** 3 years - 2 months
End date: 30/11/1986
Entity where activity was carried out: Junta de Energía Nuclear
Faculty, institute or centre: División de Fusión

4 **Name of the grant:** NATO Scholarship
Aims: Pre-doctoral
Awarding entity: NATO
Conferral date: 03/1985 **Duration:** 1 year
End date: 03/1986
Entity where activity was carried out: Fusion Energy Division, ORNL, TN, USA