



**Jacobo Aguirre Araujo**

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## Jacobo Aguirre Araujo

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### Current professional situation

**Employing entity:** Centro Nacional de Biotecnología (CSIC)

**Professional category:** Post-doctoral researcher

**Start date:** 01/08/2018

**Type of contract:** Temporary employment contract

### Previous positions and activities

	Employing entity	Professional category	Start date
1	Centro Nacional de Biotecnología (CSIC)	Post-doctoral researcher "Severo Ochoa"	01/07/2016
2	Centro Nacional de Biotecnología (CSIC)	Post-doctoral researcher	01/06/2014
3	Centro de Astrobiología	Postdoctoral researcher	01/01/2014
4	Universidad Carlos III de Madrid	Post-doctoral researcher	05/04/2013
5	Centro de Astrobiología (CSIC-INTA)	Post-doctoral researcher (Contrato de trabajo para incorporar investigadores al sistema español de ciencia y tecnología)	02/04/2008
6	Centro de Astrobiología (CSIC-INTA)	Post-doctoral researcher (Asistencia técnica para estudios sobre complejidad)	01/09/2006
7	Universidad Rey Juan Carlos	Ayudante Doctor	01/09/2004
8	Universidad Rey Juan Carlos	Ayudante de Escuela Universitaria	01/10/1999

**1** **Employing entity:** Centro Nacional de Biotecnología (CSIC)  
**Professional category:** Post-doctoral researcher "Severo Ochoa"  
**Start-End date:** 01/07/2016 - 30/06/2018      **Duration:** 2 years

**2** **Employing entity:** Centro Nacional de Biotecnología (CSIC)  
**Professional category:** Post-doctoral researcher  
**Start-End date:** 01/06/2014 - 30/06/2016



- 3** **Employing entity:** Centro de Astrobiología **Type of entity:** State agency  
**Professional category:** Postdoctoral researcher  
**Start-End date:** 01/01/2014 - 01/06/2014
- 4** **Employing entity:** Universidad Carlos III de Madrid **Type of entity:** University  
**Professional category:** Post-doctoral researcher  
**Start-End date:** 05/04/2013 - 31/12/2013
- 5** **Employing entity:** Centro de Astrobiología (CSIC-INTA)  
**Professional category:** Post-doctoral researcher (Contrato de trabajo para incorporar investigadores al sistema español de ciencia y tecnología)  
**Start-End date:** 02/04/2008 - 01/04/2013 **Duration:** 5 years  
**Type of contract:** Temporary employment contract
- 6** **Employing entity:** Centro de Astrobiología (CSIC-INTA)  
**Professional category:** Post-doctoral researcher (Asistencia técnica para estudios sobre complejidad)  
**Start-End date:** 01/09/2006 - 31/03/2008
- 7** **Employing entity:** Universidad Rey Juan Carlos **Type of entity:** University  
**Professional category:** Ayudante Doctor  
**Start-End date:** 01/09/2004 - 31/08/2006
- 8** **Employing entity:** Universidad Rey Juan Carlos **Type of entity:** University  
**Professional category:** Ayudante de Escuela Universitaria  
**Start-End date:** 01/10/1999 - 31/08/2004



## Education

### University education

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

**University degree:** Higher degree

**Name of qualification:** Licenciado en Ciencias Físicas Especialidad Astrofísica

**Degree awarding entity:** Universidad Complutense **Type of entity:** University de Madrid

**Date of qualification:** 28/07/1999

#### Doctorates

**Doctorate programme:** Doctor en Informática y modelización matemática

**Degree awarding entity:** Universidad Rey Juan Carlos

**Date of degree:** 05/03/2004

**DEA awarding entity:** Universidad Rey Juan Carlos

**European doctorate:** Yes

**Date of certificate:** 01/03/2004

**Thesis title:** Uncertainty in nonlinear dynamics: Fractal structures, cellular models and control of chaos.

**Thesis director:** Miguel Ángel Fernández Sanjuán

**Obtained qualification:** Sobresaliente cum laude por unanimidad.

### Specialised, lifelong, technical, professional and refresher training (other than formal academic and healthcare studies)

**1 Type of training:** Course

**Training title:** Programming in Matlab

**Awarding entity:** MathWorks Company

**End date:** 07/2004

**Duration in hours:** 15 hours

**2 Type of training:** Course

**Training title:** Course on chaotic dynamics and chaos.

**City awarding entity:** Lyngby, Denmark

**Awarding entity:** Danish Technical University

**End date:** 05/2001

**Duration in hours:** 56 hours

**3 Type of training:** Course

**Training title:** Encuentro sobre fronteras de la ciencia Tiempo de física.

**Awarding entity:** Universidad de Salamanca

**End date:** 29/02/2000

**Type of entity:** University

**Duration in hours:** 15 hours

**4 Type of training:** Course

**Training title:** Summer school "Let's face chaos through nonlinear dynamics".

**City awarding entity:** Maribor, Slovenia

**Awarding entity:** University of Maribor, Slovenia**End date:** 11/07/1999**Duration in hours:** 100 hours**5 Training title:** Course on programming in Visual Basic and Internet.**Awarding entity:** Empresa Central Informática, Grupo Indra**End date:** 10/1998**Duration in hours:** 50 hours**6 Type of training:** Course**Training title:** Course on numerical calculus**City awarding entity:** Madrid, Spain**Awarding entity:** Universidad Complutense de Madrid**End date:** 30/11/1996**Type of entity:** University**Duration in hours:** 20 hours

## Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
French	B2	C1	B2	B2	B1
English	C2	C2	C2	C2	C2

## Teaching experience

### General teaching experience

**1 Type of teaching:** Official teaching**Name of the course:** Fisica**Type of programme:** Bachelor's degree**University degree:** Licenciado en Ciencias Ambientales**Course given:** 1**Start date:** 01/10/1999**End date:** 01/06/2006**End date:** 2006**Type of hours/ ECTS credits:** Hours**Hours/ECTS credits:** 354**Entity:** Universidad Rey Juan Carlos**Type of entity:** University**2 Type of teaching:** Official teaching**Name of the course:** Fundamentos Físicos de la ingeniería**Type of programme:** Engineering**Type of subject:** Core**University degree:** Ingeniero Químico**Course given:** 1**Start date:** 01/10/2004**End date:** 01/06/2005**End date:** 2005**Type of hours/ ECTS credits:** Hours**Hours/ECTS credits:** 45**Entity:** Universidad Rey Juan Carlos**Type of entity:** University**3 Type of teaching:** Official teaching**Name of the course:** Física**Type of programme:** Engineering



**Type of subject:** Core

**University degree:** Ingeniero de Telecomunicación

**Course given:** 1

**Start date:** 01/10/2003

**End date:** 2004

**Hours/ECTS credits:** 12

**Entity:** Universidad Rey Juan Carlos

**End date:** 01/06/2004

**Type of hours/ ECTS credits:** Hours

**Type of entity:** University

**4** **Type of teaching:** Official teaching

**Name of the course:** Fundamentos Físicos de la Informática

**Type of programme:** Engineering

**Type of subject:** Core

**University degree:** Ingeniería Informática

**Course given:** 1

**Start date:** 01/10/2001

**End date:** 2003

**Hours/ECTS credits:** 94

**Entity:** Universidad Rey Juan Carlos

**End date:** 01/06/2003

**Type of hours/ ECTS credits:** Hours

**Type of entity:** University

**5** **Type of teaching:** Official teaching

**Name of the course:** Fundamentos Físicos de la Ingeniería

**Type of programme:** Technical engineering

**Type of subject:** Core

**University degree:** Ingeniero Técnico Industrial Especialidad Química

**Course given:** 1

**Start date:** 01/10/2001

**End date:** 2003

**Hours/ECTS credits:** 54

**Entity:** Universidad Rey Juan Carlos

**End date:** 01/06/2003

**Type of hours/ ECTS credits:** Hours

**Type of entity:** University

**6** **Type of teaching:** Official teaching

**Name of the course:** Fundamentos Físicos de la Informática

**Type of programme:** Technical engineering

**Type of subject:** Core

**University degree:** Ingeniero Técnico Informática de Sistemas

**Course given:** Primero

**Start date:** 01/10/1999

**End date:** 2002

**Hours/ECTS credits:** 141

**Entity:** Universidad Rey Juan Carlos

**End date:** 01/06/2002

**Type of hours/ ECTS credits:** Hours

**Type of entity:** University

**7** **Type of teaching:** Official teaching

**Name of the course:** Fundamentos Físicos de la Informática

**Type of programme:** Technical engineering

**Type of subject:** Core

**University degree:** Ingeniero Técnico Informática de Gestión

**Course given:** 1

**Start date:** 01/10/1999

**End date:** 2000

**Hours/ECTS credits:** 30

**Entity:** Universidad Rey Juan Carlos

**End date:** 01/06/2000

**Type of hours/ ECTS credits:** Hours

**Type of entity:** University



## Experience supervising doctoral thesis and/or final year projects

- 1** **Project title:** Application of complex network theory to the development of a simple model of the evolution of life on Earth  
**Entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Student:** Sergio Averó  
**Obtained qualification:** 8/10  
**Date of reading:** 12/09/2019
- 2** **Project title:** Degenerate versus non-degenerate spectral effects on competing networks in nature  
**Entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Student:** Luis Marchante  
**Date of reading:** 12/09/2019
- 3** **Project title:** From individual to collective selection in evolutionary systems modeled as complex networks  
**Type of project:** Trabajo Fin de Máster  
**Entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Student:** Oscar Gómez Balaguer  
**Obtained qualification:** 8,5/10  
**Date of reading:** 06/2017
- 4** **Project title:** Genotypic shifts in microbial populations viewed as a competition in the genome network  
**Type of project:** Proyecto Fin de Máster  
**Entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**Student:** Pablo Yubero Bernabé  
**Obtained qualification:** 10/10  
**Date of reading:** 20/09/2016
- 5** **Project title:** Estudio computacional de la creación de anillos planetarios.  
**Type of project:** End of course project  
**Entity:** Universidad Rey Juan Carlos **Type of entity:** University  
**Student:** Alejandro Plans Beriso  
**Obtained qualification:** 8,5/10  
**Date of reading:** 01/09/2004

## Other activities/achievements not included above

- 1** **Description of the activity:** 2001-2019. Organizer and teacher of the course "Workshop in Astronomy" (for people over 55 years old) at the Universidad Rey Juan Carlos (30 hours/year)  
**Organising entity:** Universidad Rey Juan Carlos **Type of entity:** University  
**End date:** 2019
- 2** **Description of the activity:** 2015-2019: Teacher of the 2-hours lecture "Introduction to complex network theory in Biophysics" at the Máster Universitario en Física de la Materia Condensada y de los Sistemas Biológicos.  
**Organising entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**End date:** 2019



- 3** **Description of the activity:** 2017-2019: Teacher of the 2-hours lecture "Introducción a la Astronomía" at the Programa de Enriquecimiento Educativo para alumnos con altas capacidades de la Comunidad de Madrid (PEAC).  
**Organising entity:** Comunidad de Madrid **Type of entity:** Comunidad Autónoma  
**End date:** 2019
- 4** **Description of the activity:** Teacher of the 2-hours lecture "Tipping points in the population composition of genomes induced by environmental changes" at the Máster Universitario en Bioinformática y Biología Computacional.  
**Organising entity:** Universidad Autónoma de Madrid **Type of entity:** University  
**End date:** 2019
- 5** **Description of the activity:** Ph. D. Thesis member of Pedro Ariza Bono: "Software BNA4D: Análisis de redes cerebrales funcionales mediante técnicas de redes complejas"  
**Organising entity:** Universidad Politécnica de Madrid **Type of entity:** University  
**End date:** 26/10/2018
- 6** **Description of the activity:** Ph. D. Thesis member of Pablo Catalán, "Models in molecular evolution: the case of toyLIFE"  
**Organising entity:** Universidad Carlos III de Madrid **Type of entity:** University  
**End date:** 24/03/2017
- 7** **Description of the activity:** Ph. D. Thesis member of Johann Heinz Martínez Huartos, "Análisis de la actividad neuronal y cerebral mediante técnicas de redes complejas"  
**Organising entity:** Universidad Politécnica de Madrid **Type of entity:** University  
**End date:** 13/11/2015
- 8** **Description of the activity:** Ph. D. Thesis member of Esther Ibáñez, "Evolutionary dynamics of populations with genotype-phenotype map"  
**Organising entity:** Universitat Politècnica de Catalunya **Type of entity:** University  
**End date:** 19/12/2014
- 9** **Description of the activity:** Ph. D. Thesis member of Javier Macías, "Fractal: modelo de representación posmoderna en la novela Estrella distante de Roberto Bolaño"  
**Organising entity:** IE UNIVERSIDAD  
**End date:** 20/07/2011
- 10** **Description of the activity:** Teaching in private companies: Introducción a las redes sociales en el ámbito sanitario.  
**Organising entity:** Merck, Sharp & Dohme, Madrid, Spain.  
**End date:** 02/12/2010
- 11** **Description of the activity:** 2004-2006: Elected member of the Junta de Escuela and the Quality Commission of the Junta de Escuela of the Universidad Rey Juan Carlos representing the hired teachers.  
**Organising entity:** Universidad Rey Juan Carlos **Type of entity:** University  
**End date:** 31/08/2006
- 12** **Description of the activity:** Coordinator of first course of Licenciatura de Ciencias Ambientales  
**Organising entity:** Universidad Rey Juan Carlos **Type of entity:** University  
**End date:** 06/2006





## 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:** Mecanismos microscópicos tras la evolución rápida: paisajes adaptativos, carreras de armas y redes de compartición de genes

**Entity where project took place:** Centro Nacional de Biotecnología **Type of entity:** State agency

**Funding entity or bodies:**

MINECO. Plan Nacional de I+D+I. Referencia FIS2017-89773-P **Type of entity:** State agency

**Start-End date:** 01/01/2018 - 31/12/2020

**Total amount:** 127.050 €

- 2** **Name of the project:** Estrategias adaptativas en poblaciones virales. Hacia la identificación de clases de universalidad en evolución molecular

**Entity where project took place:** Centro Nacional de Biotecnología **Type of entity:** State agency

**City of entity:** Madrid, Community of Madrid, Spain

**N° of researchers:** 5

**Funding entity or bodies:**

MINECO. Plan Nacional de I+D+I. Referencia FIS2014-57686.

**Start-End date:** 01/01/2015 - 31/12/2017

**Duration:** 3 years

**Total amount:** 145.000 €

- 3** **Name of the project:** Evolución de poblaciones heterogéneas. Mecanismos de generación de diversidad y efectos del ambiente en la adaptación.

**Entity where project took place:** Centro de Astrobiología (CSIC-INTA)

**Name principal investigator (PI, Co-PI....):** Susanna Cuevas Manrubia

**N° of researchers:** 9

**Funding entity or bodies:**

MICINN and MINECO. Plan Nacional de I+D+I. Referencia FIS2011-27569.

**Start-End date:** 01/01/2012 - 31/12/2014

**Duration:** 3 years

**Total amount:** 220.200 €

**Dedication regime:** Full time

- 4** **Name of the project:** Modelización y simulación de sistemas complejos (MODELICO-CM)

**Entity where project took place:** UAM, INTA, CSIC, UC3M, UCM, UPM, UNED

**Name principal investigator (PI, Co-PI....):** Enrique Lomba García (PI of group CAB: Susanna C. Manrubia) Number of groups: 11

**Funding entity or bodies:**

D. G. I. de la Comunidad de Madrid

**Start-End date:** 01/01/2010 - 31/12/2013

**Duration:** 3 years



**Participating entity/entities:** Instituto Nacional de Técnica Aeroespacial (Centro de Astrobiología); Instituto de Ciencia de Materiales de Madrid (CSIC); Instituto de Química Física Rocasolano (CSIC); U. Autónoma de Madrid; U. Carlos III de Madrid; U. Complutense de Madrid; U. Nacional de Educación a Distancia; U. Politécnica de Madrid

**Total amount:** 816.500 €

**5 Name of the project:** Evolución y organización de poblaciones heterogéneas y su relación con el ambiente

**Type of project:** Basic research (including archaeological digs, etc)

**Geographical area:** National

**Entity where project took place:** Centro de Astrobiología (CSIC-INTA)

**Name principal investigator (PI, Co-PI....):** Susanna Cuevas Manrubia.

**Nº of researchers:** 5

**Funding entity or bodies:**

Ministerio de Ciencia e Innovación.

**Start-End date:** 01/01/2009 - 31/12/2011

**Duration:** 3 years

**Total amount:** 69.938 €

**6 Name of the project:** Dinámica No Lineal de Sistemas Complejos y Aplicaciones. (Referencia: FIS2006-08525).

**Type of project:** Basic research (including archaeological digs, etc)

**Geographical area:** National

**Entity where project took place:** Universidad Rey Juan Carlos

**Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Miguel A. Fernández Sanjuán.

**Nº of researchers:** 14

**Funding entity or bodies:**

MCYT.

**Start-End date:** 01/12/2006 - 01/12/2009

**Duration:** 3 years

**Dedication regime:** Full time

**7 Name of the project:** MORECO, Modelización de redes complejas y sistemas caóticos. (Referencia: URJC-CM-2006-CET-0643.)

**Entity where project took place:** Universidad Rey Juan Carlos

**Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Inés Pérez Mariño

**Nº of researchers:** 9

**Funding entity or bodies:**

Universidad Rey Juan Carlos

**Type of entity:** University

**Start-End date:** 01/01/2007 - 31/12/2007

**Duration:** 1 year

**Total amount:** 20.000 €

**8 Name of the project:** Dinámica No Lineal, Estructuras Fractales y Aplicaciones Interdisciplinarias (Referencia: BFM2003-03081). Plan Nacional de I+D+I.

**Type of project:** Basic research (including archaeological digs, etc)

**Geographical area:** National

**Degree of contribution:** Researcher

**Entity where project took place:** Universidad Rey Juan Carlos

**Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Miguel A. Fernández Sanjuán.

**Nº of researchers:** 16

**Nª people/year:** 10

**Funding entity or bodies:**



MCYT.

**Start-End date:** 01/12/2003 - 01/12/2006

**Duration:** 3 years

**Total amount:** 104.880 €

**Dedication regime:** Full time

**9 Name of the project:** Disipación, ruido y resonancia en dinámica no lineal. (Referencia: PRE-2004-28).

**Entity where project took place:** Universidad Rey Juan Carlos

**Name principal investigator (PI, Co-PI....):** Jacobo Aguirre.

**Nº of researchers:** 5

**Funding entity or bodies:**

Universidad Rey Juan Carlos.

**Start-End date:** 01/01/2005 - 30/09/2005

**Duration:** 9 months

**Total amount:** 3.000 €

**10 Name of the project:** Redes Complejas y Aplicaciones. Acción Integrada Hispano-Portuguesa. 2003-2004.

HP02-26. Acción Integrada with the Complex Network group of Aveiro University directed by Prof. José

Fernando Mendes, Aveiro, Portugal.

**Type of project:** Basic research (including archaeological digs, etc)

**Geographical area:** European Union

**Degree of contribution:** Researcher

**Entity where project took place:** Universidad Rey Juan Carlos. Aveiro University (Portugal)

**Name principal investigator (PI, Co-PI....):** Miguel Ángel Fernández Sanjuán.

**Nº of researchers:** 4

**Funding entity or bodies:**

MCYT.

**Start-End date:** 01/01/2003 - 31/12/2004

**Duration:** 2 years

**Total amount:** 7.500 €

**Dedication regime:** Full time

**11 Name of the project:** Ayuda a grupos consolidados de investigación 2003.

**Entity where project took place:** Universidad Rey Juan Carlos **Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Miguel Ángel Fernández Sanjuán.

**Nº of researchers:** 3

**Funding entity or bodies:**

Programa Propio de Investigación de la Universidad Rey Juan Carlos. Programa de Ayuda a Grupos Consolidados. GCO2003-16. 7500 euros.

**Start-End date:** 01/01/2003 - 31/12/2003

**Duration:** 11 months - 30 days

**12 Name of the project:** Ayuda a organización de seminarios 2003. Seminario de Física No Lineal y Teoría del Caos.

**Entity where project took place:** Universidad Rey Juan Carlos **Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Miguel Ángel Fernández Sanjuán.

**Funding entity or bodies:**

Programa Propio de Investigación de la Universidad Rey Juan Carlos. 3.000 Euros.

**Start-End date:** 01/01/2003 - 31/12/2003

**Duration:** 11 months - 30 days

**Total amount:** 3.000 €



- 13** **Name of the project:** Dinámica No Lineal, Estructuras Fractales y sus Aplicaciones (Referencia: BFM2000-0967). 30.627,58 Euros. Plan Nacional de I+D+I (2000-2003).  
**Geographical area:** National  
**Entity where project took place:** Universidad Rey Juan Carlos **Type of entity:** University  
**Name principal investigator (PI, Co-PI....):** 1  
**Nº of researchers:** 4  
**Funding entity or bodies:** MCYT.  
**Start-End date:** 01/12/2000 - 01/12/2003 **Duration:** 3 years
- 14** **Name of the project:** Sincronización y control en sistemas ópticos no lineales. Acción Integrada Hispano-Italiana. HI 2001 – 0110  
**Type of project:** Basic research (including archaeological digs, etc) **Geographical area:** European Union  
**Degree of contribution:** Researcher  
**Entity where project took place:** Universidad Rey Juan Carlos. University of Florence (Italy)  
**Name principal investigator (PI, Co-PI....):** Miguel Ángel Fernández Sanjuán.  
**Funding entity or bodies:** MCYT.  
**Start-End date:** 01/01/2002 - 31/03/2003 **Duration:** 1 year - 3 months  
**Total amount:** 8.145 €  
**Dedication regime:** Full time
- 15** **Name of the project:** Fenómenos No Lineales y Caos en Sistemas Dinámicos.  
**Type of project:** Basic research (including archaeological digs, etc) **Geographical area:** National  
**Degree of contribution:** Researcher  
**Entity where project took place:** Universidad Rey Juan Carlos **Type of entity:** University  
**Name principal investigator (PI, Co-PI....):** Miguel Ángel Fernández Sanjuán.  
**Nº of researchers:** 10  
**Funding entity or bodies:** Convocatoria de Proyectos de Investigación 2002 del Vicerrectorado de Investigación Desarrollo e Innovación Tecnológica de la Universidad Rey Juan Carlos. PIGE02-04.  
**Start-End date:** 01/01/2002 - 31/12/2002 **Duration:** 11 months - 30 days  
**Total amount:** 7.200 €  
**Dedication regime:** Full time
- 16** **Name of the project:** Dinámica Lagrangiana en flujos de fluido tridimensionales. Acción integrada Hispano-Alemana.  
**Type of project:** Basic research (including archaeological digs, etc) **Geographical area:** European Union  
**Degree of contribution:** Researcher  
**Entity where project took place:** Universidad Rey Juan Carlos. Potsdam University (Germany)  
**Name principal investigator (PI, Co-PI....):** Miguel A. Fernández Sanjuán.  
**Nº of researchers:** 8  
**Funding entity or bodies:** MCYT (Ref: HA2000-0018). Acción Integrada Hispano-Alemana



**Start-End date:** 01/01/2001 - 31/12/2002

**Duration:** 2 years

**Total amount:** 16.287,43 €

- 17 Name of the project:** Aplicaciones de la dinámica no lineal y la teoría del caos. Ayuda 2001 a la Investigación del Vicerrectorado de Investigación y Tercer Ciclo de la Universidad Rey Juan Carlos. PGRAL – 2001/02.

**Entity where project took place:** Universidad Rey Juan Carlos **Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Miguel Ángel Fernández Sanjuán.

**Nº of researchers:** 6

**Funding entity or bodies:**

Universidad Rey Juan Carlos

**Type of entity:** University

**City funding entity:** Móstoles, Community of Madrid, Spain

**Start-End date:** 01/01/2001 - 31/12/2001

**Duration:** 11 months - 30 days

**Total amount:** 4.288 €

- 18 Name of the project:** Seminario de Física No Lineal y Teoría del Caos. Ayuda 2001 a la Organización de Congresos, Conferencias y Seminarios del Vicerrectorado de Alumnos y Extensión Universitaria de la Universidad Rey Juan Carlos.

**Entity where project took place:** Universidad Rey Juan Carlos **Type of entity:** University

**Name principal investigator (PI, Co-PI....):** Miguel Ángel Fernández Sanjuán.

**Funding entity or bodies:**

Universidad Rey Juan Carlos.

**Start-End date:** 01/01/2001 - 31/12/2001

**Duration:** 1 year

**Total amount:** 853 €

## R&D non-competitive contracts, agreements or projects with public or private entities

- 1 Name of the project:** Asesoramiento en el ámbito de las redes complejas al sector farmacéutico a través de la empresa Complexity Killed the Cat S.L. (fundada en 2013).

**Degree of contribution:** Coordinator of total project, network or consortium

**Name principal investigator (PI, Co-PI....):** Jacobo Aguirre

**Nº of researchers:** 2

**Funding entity or bodies:**

Merck Sharp & Dohme España, S.A., Universidad Rey Juan Carlos, Zambon S.A.

**Start date:** 2013

**Duration:** 6 years

**Total amount:** 74.095 €

- 2 Name of the project:** Prestación de servicios técnicos mediante análisis de redes complejas dentro del área sanitaria.

**Type of project:** Research and development, including transfer

**Geographical area:** National

**Degree of contribution:** Coordinator of total project, network or consortium

**Entity where project took place:** Merck Sharp & Dohme de España, S.A. **Type of entity:** Business

**City of entity:** Madrid, Spain

**Name principal investigator (PI, Co-PI....):** Javier M. Buldú; Juan Almendral Sánchez

**Nº of researchers:** 4

**Participating entity/entities:** Merck Sharp & Dohme de España, S.A.; Universidad Rey Juan Carlos

**Funding entity or bodies:**

Merck Sharp &amp; Dohme de España, S.A.

**Type of entity:** Business**City funding entity:** Madrid, Community of Madrid, Spain**Start date:** 19/01/2010**Duration:** 3 years**Total amount:** 35.950 €

## Results

### Technological results derived from specialized and transfer activities, not included in previous sections

**1** **Description:** Development of PubNet, a software to measure the scientific skills of Spanish medical doctors.

**Name of the principal Investigator (PI):** Jacobo Aguirre**Degree of contribution:** Coordinator of total project, network or consortium**Collaborating entity or bodies:**

Merck Sharp &amp; Dohme España, S.A.

**Type of entity:** Business**City collaborating entity:** Madrid, Community of Madrid, Spain**Start date:** 2017**Duration:** 2 years

**2** **Description:** Development of a software tool to analyse social network information (detection of Key Opinion Leaders, etc.).

**Collaborating entity or bodies:**

Merck Sharp &amp; Dohme España, S.A.

**Type of entity:** Business**City collaborating entity:** Madrid, Community of Madrid, Spain

**Relevant results:** This collaboration has given rise to a research contract with Merck, Sharp & Dohme (Spain) (already shown in the CV) and the development of several training activities, such as the teaching of the course "Introducción a las redes sociales en el ámbito sanitario" (MSD, December 2010) or "Redes médicas y farmacéuticas" (MSD, January 2014).

## Scientific and technological activities

### Scientific production

H index: 17

#### Publications, scientific and technical documents

- 1 Jaime Iranzo; Jacobo Aguirre. Emergence of efficiency and inequality in the growth of complex social networks. Submitted. 2019.  
**Type of production:** Scientific paper **Format:** Journal  
**Corresponding author:** Yes
- 2 Ignacio Pascual; Jacobo Aguirre; Susanna Manrubia; Jose A. Cuesta. Epistasis between cultural traits drives paradigm shifts in cultural evolution. Submitted. 2019.  
**Type of production:** Scientific paper
- 3 Jacobo Aguirre; Juan Almendral; Javier Buldú; Regino Criado; Ricardo Gutiérrez; Inmaculada Leyva; Miguel Romance; Irene Sendiña. Experimental complexity in physical, social and biological systems. CHAOS, SOLITONS & FRACTALS. 120, pp. 200 - 202. 2019.  
**Type of production:** Scientific paper **Format:** Journal
- 4 Javier M. Buldú; Jacobo Aguirre Araujo. Taming out-of-equilibrium dynamics on interconnected networks. (in 2nd revision at Nat. Comms.). 2019.  
**Type of production:** Scientific paper **Format:** Journal  
**Corresponding author:** Yes
- 5 Adriana Lucía-Sanz; Jacobo Aguirre; Susanna Manrubia. Theoretical approaches to disclosing the emergence and adaptive advantages of multipartite viruses. CURRENT OPINION IN VIROLOGY. 33, pp. 89 - 95. 2018.  
**Type of production:** Scientific paper  
**Impact source:** ISI **Category:** Science Edition - VIROLOGY  
**Impact index in year of publication:** 5.644 **Journal in the top 25%:** Yes
- 6 Maria Arribas; Jacobo Aguirre; Susanna Manrubia; Ester Lazaro. Differences in adaptive dynamics determine the success of virus variants that propagate together. VIRUS EVOLUTION. 4 - (1), pp. vex043. 2018.  
**Type of production:** Scientific paper **Format:** Journal
- 7 Jacobo Aguirre; José A. Cuesta; Pablo Catalán; Susanna Manrubia. On the networked architecture of genotype spaces and its critical effects on molecular evolution. OPEN BIOLOGY. 8, pp. 180069. 2018.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Science Edition - BIOCHEMISTRY & MOLECULAR BIOLOGY  
**Impact index in year of publication:** 3.286



- 8** Pablo Yubero; Susanna Manrubia; Jacobo Aguirre. The space of genotypes is a network of networks: implications for evolutionary and extinction dynamics. *SCIENTIFIC REPORTS*. 7 - (1), pp. 13813. 2017.  
**Type of production:** Scientific paper **Format:** Journal  
**Corresponding author:** Yes  
**Impact source:** ISI **Category:** Multidisciplinary  
**Impact index in year of publication:** 4.122 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 1
- 9** Jaime Iranzo; Javier M. Buldú; Jacobo Aguirre. Competition among networks highlights the power of the weak. *NATURE COMMUNICATIONS*. 7, pp. 13273. 2016.  
**Type of production:** Scientific paper **Format:** Journal  
**Corresponding author:** Yes  
**Impact source:** ISI **Category:** Multidisciplinary  
**Impact index in year of publication:** 12.12 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 7
- 10** F. Puente-Sánchez; J. Aguirre; V. Parro. A novel conceptual approach to read-filtering in high-throughput amplicon sequencing studies. *NUCLEIC ACIDS RESEARCH*. 44 - (4), pp. e40. 2016.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Science Edition - BIOCHEMISTRY & MOLECULAR BIOLOGY  
**Impact index in year of publication:** 10.16 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 16
- 11** Y. Blanco; A. Quesada; I. Gallardo-Carreño; J. Aguirre; V. Parro. CYANOCHIP: an antibody microarray for high taxonomical resolution cyanobacteria monitoring. *ENVIRONMENTAL SCIENCE & TECHNOLOGY*. 49 - 3, pp. 1611 - 1620. 2015.  
**Type of production:** Scientific paper **Category:** Environmental Science (miscellaneous)  
**Impact source:** ISI **Journal in the top 25%:** Yes  
**Impact index in year of publication:** 5.48 **Citations:** 5  
**Source of citations:** Google scholar
- 12** J.A. Capitán; J. Aguirre; S. Manrubia. Dynamical community structure of populations evolving on genotype networks. *CHAOS, SOLITONS & FRACTALS*. 72, pp. 99 - 106. 2015.  
**Type of production:** Scientific paper **Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY  
**Impact source:** ISI **Citations:** 2  
**Impact index in year of publication:** 1.503  
**Source of citations:** Google scholar
- 13** J. Aguirre; S. Manrubia. Tipping points and early warning signals in the genomic composition of populations induced by environmental changes. *SCIENTIFIC REPORTS*. 5, pp. 9664. 2015.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Multidisciplinary  
**Impact index in year of publication:** 5.078 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 4





- 14** Yolanda Blanco; Luis Rivas; Antonio García-Moyano; Jacobo Aguirre; Patricia Cruz-Gil; Arantxa Palacín; Esta Van Heerden; Víctor Parro. Deciphering the Prokaryotic Community and Metabolisms in South African Deep-Mine Biofilms through Antibody Microarrays and Graph Theory. PLoS ONE. 9 - 12, pp. e114180. 2014.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Multidisciplinary  
**Impact index in year of publication:** 3.53 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 11
- 15** J. Aguirre; R. Sevilla-Escoboza; R. Gutiérrez; D. Papo; J. M. Buldú. Synchronization of interconnected networks: the role of connector nodes. PHYSICAL REVIEW LETTERS. 112, pp. 248701. 2014.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY  
**Impact index in year of publication:** 7.728 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 76
- 16** Aguirre; J.; Papo; D. and Buldú; J. M. Successful strategies in competing networks. NATURE PHYSICS. 9, pp. 230 - 234. 2013.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI  
**Impact index in year of publication:** 19.352  
**Source of citations:** Google scholar **Citations:** 68
- 17** A. Palacín; C. Gómez-Casado; L. Rivas; J. Aguirre; et al. Analysis of plant food cross-reactivity using a new allergen microarray: geographical recognition of lipid transfer proteins and thaumatin in fruit allergic patients. ALLERGY. 67 (Supp.96), pp. 86 - 87. 2012.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Science Edition - ALLERGY  
**Impact index in year of publication:** 5.88 **Journal in the top 25%:** Yes
- 18** Palacín; A.; Gómez-Casado; C.; Rivas; L. A.; Aguirre; J., et al. Graph based study of allergen cross-reactivity of plant lipid transfer proteins (LTPs) using microarray in a multicenter study. PLOS ONE. 7, pp. e50799. 2012.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Biology  
**Impact index in year of publication:** 4.092 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 31
- 19** Palacín; A.; Rivas; L. A.; Gómez-Casado; C.; Aguirre; J., et al. The Involvement of thaumatin-like proteins in plant food cross-reactivity: A multicenter study using a specific protein microarray. PLOS ONE. 7, pp. e44088. 2012.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** biology  
**Impact index in year of publication:** 4.092 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 49



- 20** Aguirre; J.; and Peralta-Salas; D. Campos magnéticos caóticos creados por cables de corriente continua. REVISTA IBEROAMERICANA DE FISICA. 7, pp. 20 - 25. 2011.  
**Type of production:** Scientific paper **Format:** Journal
- 21** Rivas; L. A.; Aguirre; J.; Blanco; Y.; González-Toril; E.; Parro; V. Graph-based deconvolution analysis of multiplex sandwich microarray immunoassays: applications for environmental monitoring. ENVIRONMENTAL MICROBIOLOGY. 13 (6), pp. 1421 - 1432. 2011.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Science Edition - MICROBIOLOGY  
**Impact index in year of publication:** 5.84 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 18
- 22** Capitán; J. A.; Cuesta; J. A.; Manrubia; S. C. and Aguirre; J. Severe hindrance of viral infection propagation in spatially extended hosts. PLOS ONE. 6, pp. e23358. 2011.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** biology  
**Impact index in year of publication:** 4.092 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 8
- 23** Cuesta; J. A.; Aguirre; J.; Capitán; J. A. and Manrubia; S. C. Struggle for space: Viral extinction through competition for cells. PHYSICAL REVIEW LETTERS. 106, pp. 028104. 2011.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY  
**Impact index in year of publication:** 7.370 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 17
- 24** Aguirre; J.; Buldú; J.M.; Stich; M. and Manrubia; S. C. Topological structure of the space of phenotypes: The case of RNA neutral networks. PLOS ONE. 6, pp. e26324. 2011.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** biology  
**Impact index in year of publication:** 4.092 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 55
- 25** Aguirre; J.; Luque; A.; and Peralta-Salas; D. Motion of charged particles in magnetic fields created by symmetric configurations of wires. PHYSICA D. 239, pp. 654 - 674. 2010.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Science Edition - PHYSICS, MATHEMATICAL  
**Impact index in year of publication:** 1.557  
**Source of citations:** Google scholar **Citations:** 8
- 26** Aguirre; J.; Lázaro; E.; and Manrubia; S. C. A Trade-Off Between Neutrality and Adaptability Limits the Optimization of Viral Quasispecies (congress abstract). ORIGINS OF LIFE AND EVOLUTION OF BIOSPHERES. 39, pp. 333 - 333. 2009.  
**Type of production:** Scientific paper **Format:** Journal



**Impact source:** ISI

**Impact index in year of publication:** 2.053

**Category:** Biology

**Journal in the top 25%:** No

- 27** Aguirre; J.; Lázaro; E.; and Manrubia; S. C.A trade-off between neutrality and adaptability limits the optimization of viral quasispecies.JOURNAL OF THEORETICAL BIOLOGY. 261, pp. 148 - 155. 2009.

**Type of production:** Scientific paper

**Format:** Journal

**Impact source:** ISI

**Category:** Science Edition - MATHEMATICAL & COMPUTATIONAL BIOLOGY

**Impact index in year of publication:** 2.574

**Journal in the top 25%:** Yes

**Source of citations:** Google scholar

**Citations:** 17

- 28** Aguirre; J.; Buldú; J. M.; and Manrubia; S. C.Evolutionary dynamics on networks of selectively neutral genotypes: Effects of topology and sequence stability.PHYSICAL REVIEW E. 80, pp. 066112. 2009.

**Type of production:** Scientific paper

**Category:** Science Edition - PHYSICS, MATHEMATICAL

**Impact source:** ISI

**Impact index in year of publication:** 2.400

**Journal in the top 25%:** Yes

**Source of citations:** Google scholar

**Citations:** 23

- 29** Aguirre; J.; Viana; R.; Sanjuán; M. A. F.Fractal structures in nonlinear dynamics.REVIEWS OF MODERN PHYSICS. 81, pp. 331 - 386. 2009.

**Type of production:** Scientific paper

**Format:** Journal

**Impact source:** ISI

**Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY

**Impact index in year of publication:** 33.145

**Journal in the top 25%:** Yes

**Position of publication:** 1

**Source of citations:** Google scholar

**Citations:** 175

- 30** Buldú; J. M.; Aguirre; J.; and Manrubia; S. C.Seeking robustness: High neutrality and stable structures in populations of RNA sequences (congress abstract).ORIGINS OF LIFE AND EVOLUTION OF BIOSPHERES. 39, pp. 199 - 199. 2009.

**Type of production:** Scientific paper

**Format:** Journal

**Impact source:** ISI

**Category:** Biology

**Impact index in year of publication:** 2.053

**Journal in the top 25%:** No

- 31** Aguirre; J.; Manrubia; S. C.Effects of spatial competition on the diversity of a quasispecies. PHYSICAL REVIEW LETTERS. 100, pp. 038106. 2008.

**Type of production:** Scientific paper

**Format:** Journal

**Impact source:** ISI

**Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY

**Impact index in year of publication:** 7.180

**Journal in the top 25%:** Yes

**Source of citations:** Google scholar

**Citations:** 18

- 32** Aguirre; J.; Giné; J.; Peralta-Salas; D.Integrability of magnetic fields created by current distributions. NONLINEARITY. 21 (1), pp. 51 - 70. 2008.

**Type of production:** Scientific paper

**Format:** Journal



**Impact source:** ISI

**Impact index in year of publication:** 1.359

**Source of citations:** Google scholar

**Category:** Science Edition - MATHEMATICS, APPLIED

**Journal in the top 25%:** Yes

**Citations:** 12

**33** Aguirre; J.; and Manrubia; S. C.Out-of-equilibrium competitive dynamics of quasispecies.EUROPHYSICS LETTERS. 77 (3), pp. 38001. 2007.

**Type of production:** Scientific paper

**Impact source:** ISI

**Impact index in year of publication:** 2.206

**Source of citations:** Google scholar

**Format:** Journal

**Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY

**Journal in the top 25%:** Yes

**Citations:** 11

**34** Aguirre; J.; and Peralta-Salas; D.Realistic examples of chaotic magnetic fields created by wires.EUROPHYSICS LETTERS. 80, pp. 60007. 2007.

**Type of production:** Scientific paper

**Impact source:** ISI

**Impact index in year of publication:** 2.206

**Source of citations:** Google scholar

**Format:** Journal

**Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY

**Journal in the top 25%:** Yes

**Citations:** 17

**35** Seoane; J.; Aguirre; J.; Sanjuán; M. A. F.; and Lai; Y.-C.Basin topology in dissipative chaotic scattering.CHAOS. 16 (2), pp. 023101. 2006.

**Type of production:** Scientific paper

**Impact source:** ISI

**Impact index in year of publication:** 1.926

**Source of citations:** Google scholar

**Format:** Journal

**Category:** Science Edition - PHYSICS, MATHEMATICAL

**Journal in the top 25%:** Yes

**Citations:** 55

**36** Aguirre; J.; Sanjuán; M. A. F.Fractalidad extrema e indeterminación clásica en sistemas dinámicos.LA GACETA DE LA REAL SOCIEDAD MATEMÁTICA ESPAÑOLA.9,1, pp. 43 - 57. 2006.

**Type of production:** Scientific paper

**Format:** Journal

**37** Aguirre; J.; Sanjuán; M. A. F.Incertidumbre clásica, dispersión caótica y estructuras fractales en física.REVISTA ESPAÑOLA DE FÍSICA. 18, 3, pp. 23, - 27. España2005.

**Type of production:** Scientific paper

**Format:** Journal

**38** Aguirre; J.; Mosekilde; E.; Sanjuán; M. A. F.Analysis of the noise-induced bursting-spiking transition in a pancreatic beta-cell model.PHYSICAL REVIEW E. 69, pp. 41910. 2004.

**Type of production:** Scientific paper

**Impact source:** ISI

**Impact index in year of publication:** 2.352

**Source of citations:** Google scholar

**Format:** Journal

**Category:** Science Edition - PHYSICS, MATHEMATICAL

**Journal in the top 25%:** Yes

**Citations:** 17

**39** Aguirre; J.; d'Ovidio; F.; Sanjuán; M. A. F.Controlling chaotic transients: Yorke's game of survival. PHYSICAL REVIEW E. 69, pp. 16203. EEUU2004.

**Type of production:** Scientific paper

**Format:** Journal



**Impact source:** ISI

**Impact index in year of publication:** 2.352

**Source of citations:** Google scholar

**Category:** Science Edition - PHYSICS,  
MATHEMATICAL

**Journal in the top 25%:** Yes

**Citations:** 24

- 40** Sanjuán; M. A. F.; Aguirre; J.; d'Ovidio; F. Le jeu de la survie en dynamique non linéaire. COMPTE-RENDUS DE LA 7 EME RENCONTRE DU NON-LINEAIRE 2004. Eds. Y. Pomeau and R. Ribotta (Non-Linéaire Publications, Orsay 2004). pp. 263 - 268. Francia 2004.

**Type of production:** Scientific paper

**Format:** Journal

- 41** Vallejo; J. C.; Aguirre; J.; Sanjuán; M. A. F. Characterization of the local instability in the Hénon-Heiles Hamiltonian. PHYSICS LETTERS A. 311, pp. 26 - 38. 2003.

**Type of production:** Scientific paper

**Impact source:** ISI

**Impact index in year of publication:** 1.324

**Source of citations:** Google scholar

**Category:** Science Edition - PHYSICS,  
MULTIDISCIPLINARY

**Journal in the top 25%:** No

**Citations:** 17

- 42** Aguirre; J.; Sanjuán; M. A. F. Limit of small exits in open Hamiltonian systems. PHYSICAL REVIEW E. 67, pp. 56201. 2003.

**Type of production:** Scientific paper

**Format:** Journal

**Impact source:** ISI

**Impact index in year of publication:** 2.202

**Source of citations:** Google scholar

**Category:** Science Edition - PHYSICS,  
MATHEMATICAL

**Journal in the top 25%:** Yes

**Citations:** 47

- 43** Aguirre; J.; Sanjuán; M. A. F. Structures fractales et capacité de prédiction dans certains systèmes dynamiques non linéaires. COMPTE-RENDUS DE LA 6 EME RENCONTRE DU NON-LINEAIRE 2003. Eds. Y. Pomeau and R. Ribotta (Non-Linéaire Publications, Orsay 2003). pp. 265 - 270. Francia 2003.

**Type of production:** Scientific paper

**Format:** Journal

- 44** Aguirre; J.; Vallejo; J. C.; Sanjuán; M. A. F. Wada basins and unpredictability in Hamiltonian and dissipative systems. INTERNATIONAL JOURNAL OF MODERN PHYSICS B. 17, 22 - 24, pp. 4171 - 4175. 2003.

**Type of production:** Scientific paper

**Format:** Journal

**Impact source:** ISI

**Impact index in year of publication:** 0.473

**Source of citations:** Google scholar

**Citations:** 19

- 45** Aguirre; J.; J.; Sanjuán; M. A. F. Unpredictable behavior in the Duffing oscillator: Wada basins. PHYSICA D. 171, pp. 41 - 51. 2002.

**Type of production:** Scientific paper

**Format:** Journal

**Impact source:** ISI

**Impact index in year of publication:** 1.655

**Source of citations:** Google scholar

**Category:** Science Edition - PHYSICS,  
MATHEMATICAL

**Journal in the top 25%:** Yes

**Citations:** 62



- 46** Aguirre J.; Vallejo J.; Sanjuán M. A. F. Chaotic invariant sets and fractal structures in the Hénon-Heiles System. MONOGRAFÍAS DEL SEMINARIO MATEMÁTICO "GARCÍA DE GALDEANO". 21, pp. 45 - 52. 2001.  
**Type of production:** Scientific paper **Format:** Journal
- 47** Aguirre, J. , Vallejo, J. C. , Sanjuán, M. A. F. Wada basins and chaotic invariant sets in the Hénon-Heiles system. PHYSICAL REVIEW E. 64, pp. 66208. 2001.  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Science Edition - PHYSICS, MATHEMATICAL  
**Impact index in year of publication:** 2.235 **Journal in the top 25%:** Yes  
**Source of citations:** Google scholar **Citations:** 123
- 48** J.M. Buldú; R. Sevilla-Escoboza; J. Aguirre; D. Papo; R. Gutiérrez. Interconnecting networks: the role of connector links. Interconnected Networks (Editor A. Garas). pp. 61 - 77. Springer, 2016. ISBN 978-3-319-23945-3  
**Type of production:** Book chapter **Format:** Book
- 49** J. Aguirre; M Stich. Modelization of evolving RNA replicators. Non-linear Dynamics in Biological Systems (Eds. J. Carballido-Landeira and B. Escribano). Sema Simai Springer Series, 2016. ISBN 978-3-319-33054-9  
**Type of production:** Book chapter **Format:** Book
- 50** Y Blanco; M Moreno-Paz; J Aguirre; V Parro. Multiplex fluorescent antibody microarrays and antibody graphs for microbial and biomarker detection in the environment. Hydrocarbon and Lipid Microbiology Protocols (Eds. T.J. McGenity et al.). pp. DOI 10.1007/8623\_201. Springer Protocols Handbooks, 2016. ISBN 978-3-662-45179-3  
**Type of production:** Book chapter **Format:** Book
- 51** R. Guantes; J. Aguirre; D. Bajic. Biología de Sistemas. Bioinformática con Ñ (Eds. A. Sebastián and A. Pascual-García). 2014.  
**Type of production:** Book chapter **Format:** Book
- 52** M. Stich; J. Aguirre; I. Dotú. Estructura, plegamiento y evolución de RNA. Bioinformática con Ñ (Eds. A. Sebastián and A. Pascual-García). 2014.  
**Type of production:** Book chapter **Format:** Book
- 53** Aguirre; J.; Sanjuán; M. A. F. Mathematical modelling of the pancreatic beta cell. Physics of complex systems and life sciences. Eds. Sanjuán, M. A. F. and Wagemakers,. pp. 1 - 20. IndiaResearch Signpost, 2007.  
**Type of production:** Book chapter

### Works submitted to national or international conferences

- 1** **Title of the work:** Degenerate versus non-degenerate spectral effects on competing networks in nature.  
**Name of the conference:** Workshop on Complex Networks in the Life Sciences, EBSA 2019 Satellite Meeting  
**City of event:** Alcalá de Henares, Spain  
**Date of event:** 25/07/2019  
**Organising entity:** European Biophysical Societies' Association  
L. Marchante; J. Aguirre.
- 2** **Title of the work:** Competition among networks highlights the power of the weak  
**Name of the conference:** COMPLENET 2019  
**Type of event:** Conference **Geographical area:** European Union



**Type of participation:** Participatory - oral communication

**City of event:** Tarragona, Spain

**Date of event:** 18/03/2019

**End date:** 21/03/2019

**Organising entity:** Universitat Rovira i Virgili

**Type of entity:** University

**With external admission assessment committee:** Yes

J. Aguirre.

- 3 Title of the work:** The space of genotypes is a network of networks: implications for evolutionary and extinction dynamics

**Name of the conference:** From sequences to functions: challenges in the computation of realistic genotype-phenotype maps

**Type of event:** Conference

**Type of participation:** Participatory - oral communication

**City of event:** Zaragoza, Spain

**Date of event:** 13/03/2019

**End date:** 15/03/2019

**Organising entity:** CECAM (Centre Européen de Calcul Atomique et Moléculaire)

J. Aguirre.

- 4 Title of the work:** The space of genotypes is a network of networks: Implications for evolutionary and extinction dynamics

**Name of the conference:** Fises'18: XXII Congreso de Física Estadística

**City of event:** Madrid, Spain

**Date of event:** 18/10/2018

**End date:** 20/10/2018

**Organising entity:** Universidad Politécnica de Madrid

**Type of entity:** University

J. Aguirre.

- 5 Title of the work:** Presentation of the Group of Evolutionary Systems

**Name of the conference:** 1a Reunión de Bioinformática y Biología Computacional de la Comunidad de Madrid REUNIÓN BIOINFORMÁTICA Y BIOLOGÍA COMPUTACIONAL COMUNIDAD DE MADRID

**City of event:** Madrid,

**Date of event:** 18/09/2018

**Organising entity:** FUNDACIÓN IMDEA ALIMENTACIÓN

J. Aguirre.

- 6 Title of the work:** Towards a theory of competition in evolutionary systems modeled as complex networks

**Name of the conference:** Minisymposium "Molecular Evolution and Fitness Landscapes" at "Modelling Biological Evolution 2017" Conference.

**Type of participation:** Participatory - invited/keynote **Reasons for participation:** Upon invitation talk

**City of event:** Leicester, United Kingdom

**Date of event:** 04/04/2017

**End date:** 07/04/2017

**Organising entity:** University of Leicester and London Mathematical Society

J. Aguirre.

- 7 Title of the work:** Competición entre redes complejas: cuando el débil vence al fuerte

**Name of the conference:** XIV Workshop del Grupo Interdisciplinar de Sistemas Complejos (GISC)

**Reasons for participation:** Upon invitation



**City of event:** Madrid, Spain

**Date of event:** 27/01/2017

**Organising entity:** Universidad Rey Juan Carlos  
J. Aguirre. **Type of entity:** University

**8 Title of the work:** Hacia una teoría de la competición en sistemas evolutivos modelizados mediante redes complejas.

**Name of the conference:** Workshop GARECOM 2016

**Geographical area:** National

**Type of participation:** Participatory - invited/keynote talk

**City of event:** Madrid, Spain

**Date of event:** 21/11/2016

**Organising entity:** Universidad Rey Juan Carlos  
J. Aguirre. **Type of entity:** University

**9 Title of the work:** Tipping points in the genetic composition of populations induced by environmental changes.

**Name of the conference:** International Workshop on Genotype-Phenotype Maps

**Type of participation:** Participatory - invited/keynote **Reasons for participation:** Upon invitation talk

**City of event:** Cambridge, United Kingdom

**Date of event:** 08/09/2016

**End date:** 09/09/2016

**Organising entity:** The Sainsbury Laboratory. University of Cambridge  
J. Aguirre.

**10 Title of the work:** Competition in evolutionary systems modeled as complex networks.

**Name of the conference:** 2nd BCAM Workshop on Nonlinear dynamics in Biological Systems

**Type of participation:** Participatory - invited/keynote **Reasons for participation:** Upon invitation talk

**City of event:** Bilbao, Spain

**Date of event:** 01/09/2016

**End date:** 02/09/2016

**Organising entity:** ASOC BCAM - BASQUE CENTER FOR APPLIED MATHEMATICS  
J Aguirre.

**11 Title of the work:** Redes de colaboración científica en medicina: publicaciones, el factor de impacto y el índice h

**Name of the conference:** 1er congreso médico virtual para especialistas

**Type of participation:** Participatory - invited/keynote **Reasons for participation:** Upon invitation talk

**Corresponding author:** Yes

**City of event:** Madrid, Spain

**Date of event:** 25/11/2014

**End date:** 28/11/2014

**Organising entity:** Merck Sharp & Dohme de España, S.A. **Type of entity:** Business

J Aguirre; JM Buldú. "Redes de colaboración científica en medicina: publicaciones, el factor de impacto y el índice h".





- 12** **Title of the work:** But... do complex networks really improve our knowledge of Biology?  
**Name of the conference:** 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 07/07/2014  
**End date:** 11/07/2014  
J. Aguirre.
- 13** **Title of the work:** Tipping points in the genetic composition of populations induced by environmental stochasticity  
**Name of the conference:** 1st BCAM Workshop on Nonlinear dynamics in Biological Systems  
**Type of event:** Conference  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Upon invitation  
**City of event:** Bilbao, Spain  
**Date of event:** 19/06/2014  
**End date:** 20/06/2014  
**Organising entity:** ASOC BCAM - BASQUE CENTER FOR APPLIED MATHEMATICS  
J. Aguirre.
- 14** **Title of the work:** Tipping points in the composition of populations at the genotypic scale  
**Name of the conference:** 4th SESBE Meeting  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** 'Participatory - poster  
**City of event:** Barcelona, Spain  
**Date of event:** 27/11/2013  
Jacobo Aguirre; Susanna Manrubia.
- 15** **Title of the work:** Competition between complex networks: phenomenology and winning strategies  
**Name of the conference:** Dynamics Days Europe 2013  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** Participatory - oral communication **Reasons for participation:** Upon invitation  
**City of event:** Madrid, Spain  
**Date of event:** 07/06/2013  
J. Aguirre; D. Papo; J. M. Buldú.
- 16** **Title of the work:** Procesos dinámicos sobre redes interconectadas: competición y estrategias.  
**Name of the conference:** Nolineal 2012  
**Type of participation:** Participatory - oral communication  
**City of event:** Zaragoza, Spain  
**Date of event:** 04/06/2012  
Aguirre; J. and Buldú; J. M.04/06/2012.
- 17** **Title of the work:** The struggle for space: A new mechanism to viral infection.  
**Name of the conference:** European Conference on Complex Systems, ECCS'11.  
**Geographical area:** International  
**Type of participation:** 'Participatory - poster



**City of event:** Vienna, Austria

**Date of event:** 11/09/2011

Aguirre, J.; Capitán, J. A.; Cuesta, J. A.; and Manrubia, S. C.11/09/2011.

**18 Title of the work:** La lucha por el espacio: extinción viral debida a la competencia por células.

**Name of the conference:** XI Congreso Nacional de Virología

**Geographical area:** National

**Type of participation:** Participatory - oral communication

**City of event:** Parque de las Ciencias de Granada,

**Date of event:** 29/05/2011

**City organizing entity:** Granada, Spain

Capitán, J. A.; Aguirre, J.; Manrubia, S. C.; and Cuesta, J. A.29/05/2011.

**19 Title of the work:** Dinámica evolutiva y topología en redes neutrales de RNA.

**Name of the conference:** Nolineal 2010.

**Type of participation:** Participatory - oral communication

**City of event:** Universidad Politécnica de Cartagena, Spain

**Date of event:** 08/06/2010

Aguirre, J., Buldú, J. M., Stich, M., and Manrubia, S. C.

**20 Title of the work:** Topology and evolution of RNA neutral networks

**Name of the conference:** BIFI 2010: Networks, A framework for cross disciplinary applications

**Type of participation:** Participatory - oral communication

**City of event:** Zaragoza, Spain

**Date of event:** 03/06/2010

Buldú, J. M., Aguirre, J., and Manrubia, S. C.

**21 Title of the work:** Evolutionary dynamics, topology and complexity on RNA neutral networks.

**Name of the conference:** The 8th AIMS Conference on Dynamical Systems, Differential Equations and Applications, session Intermingled Dynamics and Structure in Complex Systems".

**Type of participation:** Participatory - invited/keynote **Reasons for participation:** Upon invitation talk

**City of event:** Dresden University of Technology, Germany

**Date of event:** 25/05/2010

Aguirre, J.

**22 Title of the work:** El RNA como modelo de evolución molecular: plegamiento y redes neutrales.

**Name of the conference:** 2asJornadas Madrileñas de Complejidad y Mecánica Estadística.

**Type of participation:** Participatory - invited/keynote talk

**City of event:** Universidad Rey Juan Carlos, Spain

**Date of event:** 09/12/2009

Aguirre, J., Stich M.

**23 Title of the work:** Effects of topology and sequence stability on RNA neutral networks.

**Name of the conference:** Darwin09, 150 years after Darwin: from molecular evolution to language

**Type of participation:** Participatory - poster

**City of event:** Mallorca, Spain

**Date of event:** 23/11/2009

Aguirre, J., J., Buldú, J. M., and Manrubia, S. C.



- 24** **Title of the work:** RNA neutral networks: the topology of evolution  
**Name of the conference:** Conference on Dynamics in Systems Biology  
**Type of participation:** Participatory - oral communication  
**City of event:** Aberdeen, United Kingdom  
**Date of event:** 14/09/2009  
Aguirre, J., Buldú, J. M., Stich, M., and Manrubia, S. C.
- 25** **Title of the work:** Modelization of viral evolution through quasispecies theory: growth and extinction  
**Name of the conference:** Stochastic models in Physics, Biology and Social Sciences  
**Type of participation:** Participatory - invited/keynote **Reasons for participation:** Upon invitation talk  
**City of event:** Carmona, Spain  
**Date of event:** 11/02/2009  
Aguirre, J.
- 26** **Title of the work:** A trade-off between neutrality and adaptability limits the optimization of viral quasispecies.  
**Name of the conference:** Conference ISSOL 2008  
**Type of participation:** 'Participatory - poster  
**City of event:** Florence, Italy  
**Date of event:** 24/08/2008  
Aguirre, J., Manrubia, S. C., Lázaro, E.
- 27** **Title of the work:** Divulgando astronomía en la Universidad Rey Juan Carlos.  
**Name of the conference:** VIII reunión científica de la Sociedad Española de Astronomía 2008. Publicación: Hernán-Obispo, M.; Serrano, A.; Aguirre, J.; San Martín, P. Teaching and Communicating Astronomy at Rey Juan Carlos University. Highlights of Spanish Astrophysics V, Astrophysics and Space Science Proceedings, ISBN 978-3-642-11249-2. Springer-Verlag Berlin Heidelberg, 2010. Proceedings of the VIII Scientific Meeting of the Spanish Astronomical Society (SEA), Eds. J.M. Diego, L.J. Goicoechea, J. Ignacio Gonzalez-Serrano, J. Gorgas.  
**Type of participation:** 'Participatory - poster  
**City of event:** Santander.,  
**Date of event:** 07/07/2008  
Hernán-Obispo, M., Serrano, A., Aguirre, J., San Martín, P.
- 28** **Title of the work:** Neutralidad y adaptabilidad en la optimización de cuasiespecies virales.  
**Name of the conference:** Conferencia No lineal 2008.  
**Type of participation:** Participatory - oral communication  
**City of event:** Universidad Politécnica de Cataluña, Spain  
**Date of event:** 16/06/2008  
Aguirre, J., Manrubia, S. C., Lázaro, E.
- 29** **Title of the work:** Fractalidad e incertidumbre en procesos biológicos y medioambientales.  
**Name of the conference:** XXXI Reunión Bienal de Física.  
**Type of participation:** 'Participatory - poster  
**City of event:** Granada,  
**Date of event:** 10/09/2007  
Aguirre, J., Sanjuán, M. A. F.
- 30** **Title of the work:** Effects of spatial competition on the diversity of viral quasispecies.  
**Name of the conference:** Gordon Research Conference on Structural, Functional & Evolutionary Genomics.



**Type of participation:** 'Participatory - poster  
**City of event:** Hinxton,  
**Date of event:** 29/07/2007  
Aguirre, J., Manrubia, S. C.

- 31** **Title of the work:** Caos e integrabilidad en campos magnéticos creados por cables de corriente continua.  
**Name of the conference:** Nolineal 2007  
**Type of participation:** 'Participatory - poster  
**City of event:** Ciudad Real, Spain  
**Date of event:** 06/06/2007  
Aguirre, J.
- 32** **Title of the work:** Cuasiespecies virales en dos dimensiones: efectos de la difusión en la competencia y la diversidad.  
**Name of the conference:** Nolineal 2007  
**Type of participation:** Participatory - oral communication  
**City of event:** Ciudad Real,  
**Date of event:** 06/06/2007  
Aguirre, J., Manrubia, S. C.
- 33** **Title of the work:** Competitive dynamics between populations of fast mutating replicators.  
**Name of the conference:** Dynamics Days 2005  
**Type of participation:** 'Participatory - poster  
**City of event:** Berlín, Germany  
**Date of event:** 25/07/2005  
Aguirre, J., Manrubia, S. C.
- 34** **Title of the work:** Basin topology in a dissipative chaotic scattering problem  
**Name of the conference:** Gordon Research Conferences: Nonlinear Science  
**Type of participation:** 'Participatory - poster  
**City of event:** Waterville, United States of America  
**Date of event:** 26/06/2005  
Seoane, J. M., Aguirre, J., Sanjuán, M. A. F., Lai, Y.
- 35** **Title of the work:** Control of noisy transient chaos: Yorke's game of survival  
**Name of the conference:** Gordon research conferences: Nonlinear science  
**City of event:** Waterville, United States of America  
**Date of event:** 26/06/2005  
Sanjuán, M. A. F., Aguirre, J., d'Ovidio, F.
- 36** **Title of the work:** Control of transient chaos: Yorke's game of survival  
**Name of the conference:** SIAM Conference on applications of dynamical systems  
**Type of participation:** Participatory - oral communication  
**City of event:** Snowbird,  
**Date of event:** 22/05/2005  
Sanjuán, M. A. F., Aguirre, J., d'Ovidio, F.
- 37** **Title of the work:** Noisy and dissipative chaotic scattering  
**Name of the conference:** Conference on complexity in science and society  
**Type of participation:** 'Participatory - poster  
**City of event:** Ancient Olympia, Greece



**Date of event:** 21/07/2004

Seoane, J. M., Aguirre, J., Sanjuán, M. A. F.

**38 Title of the work:** Noisy and dissipative chaotic scattering

**Name of the conference:** Summer school on complexity and society

**Type of participation:** 'Participatory - poster

**City of event:** Patras, Greece

**Date of event:** 14/07/2004

Seoane, J. M., Aguirre, J., Sanjuán, M. A. F.

**39 Title of the work:** Control de transitorios caóticos en entornos ruidosos

**Name of the conference:** Nolineal 2004. Nuevos retos y perspectivas de la dinámica no lineal y sus aplicaciones. Universidad de Castilla-La Mancha

**Type of participation:** Participatory - oral communication

**City of event:** Toledo, Spain

**Date of event:** 01/06/2004

Aguirre, J., d'Ovidio, F., Sanjuán, M. A. F.

**40 Title of the work:** Modelización matemática de la cooperación entre células beta secretoras de insulina.

**Name of the conference:** Nolineal 2004. Nuevos retos y perspectivas de la dinámica no lineal y sus aplicaciones. Universidad de Castilla-La Mancha.

**Type of participation:** 'Participatory - poster

**City of event:** Toledo,

**Date of event:** 01/06/2004

Aguirre, J., Mosekilde, E., Sanjuán, M. A. F.

**41 Title of the work:** Le jeu de la survie en dynamique non linéaire.

**Name of the conference:** 7 ème Rencontre du non-linéaire 2004. Publicación: Sanjuán, M. A. F., Aguirre, J., d'Ovidio, F., Le jeu de la survie en dynamique non linéaire, Compte-rendus de la 7 eme rencontre du non-linéaire 2004, Eds. Y. Pomeau and R. Ribotta (Non-Linéaire Publications, Orsay 2004), 263-268 (2004).

**Type of participation:** Participatory - oral communication

**City of event:** Paris, France

**Date of event:** 10/03/2004

Sanjuán, M. A. F., Aguirre, J., d'Ovidio, F.

**42 Title of the work:** Control of noisy chaotic transients by targeting preimages of the escape region.

**Name of the conference:** Dynamics Days 2003. Universidad de las Islas Baleares.

**Type of participation:** 'Participatory - poster

**City of event:** Palma De Mallorca,

**Date of event:** 24/09/2003

d'Ovidio, F., Aguirre, J., Sanjuán, M. A. F.

**43 Title of the work:** Mathematical modelling of cooperative insulin secreting b-cells.

**Name of the conference:** International Conference on Mathematical Ecology. Universidad de Alcalá, Alcalá de Henares, Madrid.

**Type of participation:** 'Participatory - poster

**City of event:** Alcalá De Henares, Spain

**Date of event:** 05/09/2003

Aguirre, J., Mosekilde, E., Sanjuán, M. A. F.



- 44** **Title of the work:** Structures fractales et capacité de prédiction dans certains systèmes dynamiques non linéaires.  
**Name of the conference:** 6ème Rencontre du non-linéaire 2003. Publicación: Aguirre, J., Sanjuán, M. A. F., Structures fractales et capacité de prédiction dans certains systèmes dynamiques non linéaires, Compte-rendus de la 6 eme rencontre du non-lineaire 2003, Eds. Y. Pomeau and R. Ribotta (Non-Linéaire Publications, Orsay 2003), 265-270 (2003).  
**Type of participation:** Participatory - oral communication  
**City of event:** París,  
**Date of event:** 13/03/2003  
Sanjuán, M. A. F., Aguirre, J.
- 45** **Title of the work:** Wada basins and unpredictability in Hamiltonian and dissipative systems.  
**Name of the conference:** Dynamics Days Asia-Pacific 2002.  
**Type of participation:** Participatory - oral communication  
**City of event:** Hangzhou, China  
**Date of event:** 08/08/2002  
Sanjuán, M. A. F., Vallejo, J. C., Aguirre, J.
- 46** **Title of the work:** Distribution of Lyapunov exponents in Hamiltonian Systems.  
**Name of the conference:** European Dynamics Days 2002  
**Type of participation:** 'Participatory - poster  
**City of event:** Heidelberg, Germany  
**Date of event:** 15/07/2002  
Vallejo, J. C., Aguirre, J., Sanjuán, M. A. F.
- 47** **Title of the work:** Análisis de un modelo estocástico para las células  $\beta$  del páncreas.  
**Name of the conference:** Nolineal 2002, Conferencia sobre Dinámica No Lineal en la Naturaleza y en la Técnica. Universidad de Castilla-La Mancha, Cuenca.  
**Type of participation:** 'Participatory - poster  
**City of event:** Cuenca,  
**Date of event:** 05/06/2002  
Aguirre, J., Mosekilde, E., Sanjuán, M. A. F.
- 48** **Title of the work:** Cuencas de Wada en el oscilador de Duffing.  
**Name of the conference:** Nolineal 2002, Conferencia sobre Dinámica No Lineal en la Naturaleza y en la Técnica. Universidad de Castilla-La Mancha, Cuenca.  
**Type of participation:** 'Participatory - poster  
**City of event:** Cuenca, Spain  
**Date of event:** 05/06/2002  
Aguirre, J., Sanjuán, M. A. F.
- 49** **Title of the work:** Indeterminación total en sistemas hamiltonianos: las cuencas inciertas.  
**Name of the conference:** Nolineal 2002, Conferencia sobre Dinámica No Lineal en la Naturaleza y en la Técnica.  
**Type of participation:** Participatory - oral communication  
**City of event:** Cuenca, Spain  
**Date of event:** 05/06/2002  
Aguirre, J., Sanjuán, M. A. F.
- 50** **Title of the work:** Analysis of a stochastic model for the pancreatic beta-cell.  
**Name of the conference:** Workshop on "Control, communication and synchronization in chaotic dynamical systems".



**Type of participation:** 'Participatory - poster  
**City of event:** Dresden, Germany  
**Date of event:** 11/11/2001  
Aguirre, J. , Mosekilde, E., Sanjuán, M. A. F.

- 51** **Title of the work:** Characterization of the local instability in the Hénon-Heiles potential.  
**Name of the conference:** Workshop on ``Control, communication and synchronization in chaotic dynamical systems". Max Planck Institute for Physics of Complex Systems.  
**Type of participation:** 'Participatory - poster  
**City of event:** Dresden, Germany  
**Date of event:** 11/11/2001  
Vallejo, J. C. , Aguirre, J. , Sanjuán, M. A. F.
- 52** **Title of the work:** Total uncertainty (or riddled basins?) in Hamiltonian systems.  
**Name of the conference:** Workshop on ``Control, communication and synchronization in chaotic dynamical systems".  
**Type of participation:** Participatory - oral communication  
**City of event:** Dresde, Germany  
**Date of event:** 11/11/2001  
Aguirre, J., Sanjuán, M. A. F.
- 53** **Title of the work:** Analysis of a stochastic model for a pancreatic beta-cell  
**Name of the conference:** Nonlinear Science Festival III.  
**Type of participation:** 'Participatory - poster  
**City of event:** Lyngby, Denmark  
**Date of event:** 12/06/2001  
Aguirre, J. , Sanjuán, M. A. F., Mosekilde, E.
- 54** **Title of the work:** Control in chaotic saddles  
**Name of the conference:** Nonlinear Science Festival III  
**Type of participation:** 'Participatory - poster  
**City of event:** Lyngby, Denmark  
**Date of event:** 12/06/2001  
d'Ovidio, F., Aguirre, J. , Sanjuán, M. A. F., Mosekilde, E.
- 55** **Title of the work:** Basin Boundaries in the Hénon-Heiles system  
**Name of the conference:** Dynamics Days Europe 2001  
**Type of participation:** Participatory - oral communication  
**City of event:** Dresden, Germany  
**Date of event:** 05/06/2001  
Sanjuán, M. A. F., Aguirre, J., Vallejo, J. C.
- 56** **Title of the work:** Stochastic behavior in the b-cell  
**Name of the conference:** 4th Topical meeting on biophysics, biological physics, physical biology  
**Type of participation:** 'Participatory - poster  
**City of event:** Niels Bohr Institute, Denmark  
**Date of event:** 22/05/2001  
Aguirre, J., Mosekilde, E., Sanjuán, M. A. F.



- 57** **Title of the work:** Chaotic Invariant sets and Wada Basins in Hénon-Heiles system.  
**Name of the conference:** 6th SIAM Conference on Applications to Dynamical Systems.  
**Type of participation:** Participatory - oral communication  
**City of event:** Snowbird, United States of America  
**Date of event:** 19/05/2001  
Sanjuán, M. A. F., Aguirre, J., Vallejo, J. C.
- 58** **Title of the work:** Chaotic Invariant Sets in the Hénon-Heiles system  
**Name of the conference:** International School on Space-Time Chaos: Characterization, Control and Synchronization. Universidad de Navarra.  
**Type of participation:** 'Participatory - poster  
**City of event:** Pamplona, Spain  
**Date of event:** 19/06/2000  
Aguirre, J. , Vallejo, J. C. , Sanjuán, M. A. F.
- 59** **Title of the work:** Conjuntos caóticos invariantes y estructuras fractales en el sistema de Hénon-Heiles.  
**Name of the conference:** III Jornadas de Mecánica Celeste. Publicación: Aguirre, J., Sanjuán, M. A. F., Chaotic Invariant Sets and Fractal Structures in the Hénon-Heiles System, Monografías del seminario matemático García de Galdeano” 21, 45-52 (2001)  
**Type of participation:** Participatory - oral communication  
**City of event:** Valladolid, Spain  
**Date of event:** 08/06/2000  
Sanjuán, M. A. F., Aguirre, J. , Vallejo, J. C.
- 60** **Title of the work:** Estructuras fractales en el sistema de Hénon-Heiles  
**Name of the conference:** Nolineal 2000, Conferencia de Ciencia No Lineal  
**Type of participation:** Participatory - oral communication  
**City of event:** Almagro, Spain  
**Date of event:** 31/05/2000  
Aguirre, J., Vallejo, J. C., Sanjuán, M. A. F.

### Works submitted to national or international seminars, workshops and/or courses

- 1** **Title of the work:** Introducción a la astronomía. Un viaje por el Universo.  
**City of event:** Madrid, Spain  
**Date of event:** 08/10/2019  
**Organising entity:** Colegio Amor de Dios
- 2** **Title of the work:** Dibujando el Cosmos  
**Name of the event:** Día Internacional de los Museos  
**City of event:** Madrid, Spain  
**Date of event:** 18/05/2019  
**Organising entity:** Museo ABC de Dibujo e Ilustración      **Type of entity:** Museo
- 3** **Title of the work:** La competición entre redes refuerza el poder de los débiles  
**Name of the event:** Seminario del Departamento de Matemáticas.  
**Date of event:** 12/12/2016  
**Organising entity:** Universidad Carlos III de Madrid      **Type of entity:** University





- 4** **Title of the work:** Competición entre redes complejas: cuando el débil vence al fuerte  
**Name of the event:** Seminarios del Complex Systems Group  
**City of event:** Madrid, Spain  
**Date of event:** 19/10/2016  
**Organising entity:** Centro de Tecnología Biomédica (U.P.M.)
- 5** **Title of the work:** Competition in evolutionary systems modeled as complex networks  
**Name of the event:** LifeScience department seminar  
**Date of event:** 06/10/2016  
**Organising entity:** Barcelona Supercomputing Center (BSC-CNS)  
**City organizing entity:** Barcelona,
- 6** **Title of the work:** Metodologías de aplicación práctica a negocio: Teoría de redes y cadenas de Markov  
**City of event:** Madrid,  
**Date of event:** 20/04/2016  
**Organising entity:** Merck, Sharp & Dohme (España)
- 7** **Title of the work:** Competencia entre redes complejas: fenomenología y estrategias ganadoras  
**Name of the event:** Programa de doctorado "TECNOLOGÍAS DE LA INFORMACIÓN Y LAS COMUNICACIONES" de la Universidad de Alcalá  
**City of event:** Alcalá de Henares, Spain  
**Date of event:** 25/06/2015  
**Organising entity:** Universidad de Alcalá de Henares
- 8** **Title of the work:** Modelling evolution: Tipping points in the genomic composition of populations induced by environmental changes  
**Name of the event:** XXII CNB Scientific Workshop  
**City of event:** Madrid, Spain  
**Date of event:** 15/12/2014  
**End date:** 16/12/2014  
**Organising entity:** Centro Nacional de Biotecnología **Type of entity:** State agency
- 9** **Title of the work:** Redes médicas y farmacéuticas.  
**City of event:** Madrid, Spain,  
**Date of event:** 06/02/2014  
**Organising entity:** Merck Sharp & Dohme de España, S.A. **Type of entity:** Business
- 10** **Title of the work:** La complejidad del mundo en un grafo: de la evolución de microorganismos a las redes sociales  
**Name of the event:** Semana de matemáticas en el planeta Tierra: Un planeta lleno de matemáticas, Museo de Ciencias Naturales  
**City of event:** Madrid, Spain  
**Date of event:** 10/10/2013  
**Organising entity:** INSTITUTO DE CIENCIAS MATEMATICAS **Type of entity:** State agency
- 11** **Title of the work:** Introducción a las redes sociales en el ámbito sanitario. Course given at Merck, Sharp & Dohme (MSD) Company, Madrid.  
**Name of the event:** Jornadas de MSD de introducción a las redes sociales  
**Type of event:** Course



**Date of event:** 02/12/2010

**Organising entity:** Merck Sharp & Dohme de España, S.A.

**Type of entity:** Business

- 12** **Title of the work:** Introducción a la astronomía. Un viaje por el Sistema Solar.  
**Name of the event:** Semana de la Ciencia del colegio Amor de Dios  
**City of event:** Madrid, Spain  
**Date of event:** 01/06/2010  
**Organising entity:** Colegio Amor de Dios
- 13** **Title of the work:** Darwin, la evolución y el Centro de Astrobiología.  
**Name of the event:** Jornadas culturales: "Personajes de la Historia"  
**Type of event:** Course  
**Date of event:** 24/02/2010  
**Organising entity:** Centro de Astrobiología **Type of entity:** State agency
- 14** **Title of the work:** Evolution on networks: a biological application.  
**Name of the event:** Seminarios conjuntos de matemática aplicada y sistemas complejos  
**Type of event:** Seminar  
**Date of event:** 20/10/2009  
**Organising entity:** Universidad Rey Juan Carlos **Type of entity:** University
- 15** **Title of the work:** De Aristóteles a Galileo: Dos mil años bajo el cielo estrellado.  
**Name of the event:** Diálogos del Conocimiento  
**Type of event:** Seminar  
**Date of event:** 29/06/2009  
**Organising entity:** Café El Despertar, Madrid, Spain.
- 16** **Title of the work:** De la biofísica a la medicina: Modelización de las células beta del páncreas secretoras de insulina.  
**Name of the event:** Seminarios científicos del Centro de Astrobiología  
**Type of event:** Seminar  
**Date of event:** 10/10/2006  
**Organising entity:** Centro de Astrobiología **Type of entity:** State agency
- 17** **Title of the work:** De la biofísica a la medicina: Modelización de las células beta del páncreas secretoras de insulina  
**Name of the event:** 1st meeting on Life Sciences  
**Type of event:** Seminar  
**City of event:** Aranjuez, Madrid, Spain,  
**Date of event:** 22/09/2005  
**Organising entity:** Universidad Rey Juan Carlos **Type of entity:** University
- 18** **Title of the work:** De la biofísica a la medicina: Análisis del comportamiento eléctrico de las células beta secretoras de insulina (aplicado a señales obtenidas de pacientes diabéticos).  
**Name of the event:** Seminarios del Dpto. de Medicina Preventiva.  
**Type of event:** Seminar  
**Date of event:** 07/06/2004  
**Organising entity:** Facultad de Medicina. Universidad Autónoma de Madrid.



- 19** **Title of the work:** Analysis of a stochastic model for the pancreatic beta-cell.  
**Type of event:** Seminar  
**Date of event:** 12/03/2003  
**Organising entity:** Danish Technical University
- 20** **Title of the work:** Fractal structures in the Hénon-Heiles system.  
**Name of the event:** 1st International week of Nonlinear Dynamics.  
**Type of event:** Seminar  
**Date of event:** 15/06/2000  
**Organising entity:** Universidad Rey Juan Carlos      **Type of entity:** University
- 21** **Title of the work:** Cuencas fractales en sistemas hamiltonianos: el problema del escape celeste.  
**Name of the event:** Seminarios del área de física de la URJC  
**Type of event:** Seminar  
**Date of event:** 20/01/2000  
**Organising entity:** Universidad Rey Juan Carlos      **Type of entity:** University

### Other dissemination activities

- 1** **Title of the work:** 2002-2019: Teaching and practice of Amateur Astronomy. I cofounded in 2002 the Astronomy Group of Universidad Rey Juan Carlos ([www.tallerdeastronomia.es](http://www.tallerdeastronomia.es)). Some typical activities are: observation of relevant astronomical phenomena, conferences in universities, schools and cultural centres, interviews in mass media communicating about astronomy, etc.  
**Type of event:** Fairs and exhibitions  
**Organising entity:** Grupo de Astronomía de la Universidad Rey Juan Carlos
- 2** **Title of the work:** Interviews in mass media communicating about science.  
**Type of event:** Media interviews  
"(radio: Onda Cero, RNE, Telemadrid Radio and Radiovallekas; newspapers: El Mundo, [elmundo.es](http://elmundo.es), [abc.es](http://abc.es) and La Gaceta Universitaria, and TV: Popular TV, Fuenlabrada TV)".

### R&D management and participation in scientific committees

#### Scientific, technical and/or assessment committees

- 1** **Committee title:** Banco de Evaluadores del FONCyT (Fondo para la Investigación Científica y Tecnológica)  
**Affiliation entity:** Agencia Nacional de Promoción Científica y Tecnológica de Argentina      **Type of entity:** Agencia estatal argentina  
**City affiliation entity:** Buenos Aires, Argentina  
**Start-End date:** 2016 - 2018
- 2** **Committee title:** Banco de Evaluadores de la Agencia Estatal de Investigación  
**Affiliation entity:** Agencia Estatal de Investigación de España  
**City affiliation entity:** Madrid, Spain  
**Start date:** 26/11/2018



## Organization of R&D activities

- 1** **Title of the activity:** Complex Networks 2019  
**Type of activity:** Member of the Technical Program Committee  
**Convening entity:** Calouste Gulbenkian Foundation  
**City convening entity:** Lisbon, Portugal  
**Start-End date:** 10/12/2019 - 12/12/2019
- 2** **Title of the activity:** Workshop on Complex Networks in the Life Sciences  
**Type of activity:** Satellite meeting of 12th EBSA- 10th ICBP-IUPAP Biophysics Congress 2019  
**Geographical area:** Non EU International  
**Convening entity:** European Biophysical Societies' Association  
**City convening entity:** Madrid, Spain  
**Type of participation:** Organiser  
**Start-End date:** 25/07/2019 - 25/07/2019
- 3** **Title of the activity:** 15th Experimental Chaos and Complexity Conference  
**Geographical area:** Non EU International  
**City of event:** Madrid, Spain  
**Convening entity:** Universidad Rey Juan Carlos  
**Type of entity:** University  
**Type of participation:** Organiser  
**Start-End date:** 04/06/2018 - 07/06/2018
- 4** **Title of the activity:** Workshop on Systems Biology 2017  
**Geographical area:** National  
**City of event:** Segovia, Spain  
**Convening entity:** Centro Nacional de Biotecnología CSIC  
**City convening entity:** Spain  
**Type of participation:** Organiser  
**Start-End date:** 09/10/2017 - 10/10/2017
- 5** **Title of the activity:** Molecular Evolution and Fitness Landscapes  
**Type of activity:** Minisymposium at "Modelling Biological Evolution 2015" Conference  
**Geographical area:** Non EU International  
**Convening entity:** University of Leicester and London Mathematical Society  
**City convening entity:** Leicester, United Kingdom  
**Type of participation:** Organiser  
**Start-End date:** 28/04/2015 - 01/05/2015
- 6** **Title of the activity:** How Do Complex Networks Improve Our Knowledge of Biology?  
**Type of activity:** Minisymposium at AIMS 2014 Conference  
**Geographical area:** Non EU International  
**City of event:** Madrid, Spain  
**Convening entity:** American Institute of Mathematical Sciences  
**Type of participation:** Organiser  
**Start-End date:** 07/07/2014 - 11/07/2014

- 7** **Title of the activity:** Young Researcher's Day III  
**Type of activity:** Scientific Conference **Geographical area:** Regional  
**Convening entity:** Centro de Astrobiología  
**City convening entity:** Madrid, Spain  
**Type of participation:** Organiser  
**Nº assistants:** 40  
**Start-End date:** 23/10/2012 - 24/10/2012
- 8** **Title of the activity:** Young Researcher's Day II  
**Type of activity:** Scientific Conference **Geographical area:** Regional  
**Convening entity:** Centro de Astrobiología  
**City convening entity:** Madrid, Spain  
**Type of participation:** Organiser  
**Nº assistants:** 40  
**Start-End date:** 18/10/2011 - 19/10/2011
- 9** **Title of the activity:** Young Researcher's Day  
**Type of activity:** Scientific Conference **Geographical area:** Regional  
**Convening entity:** Centro de Astrobiología  
**City convening entity:** Madrid, Spain  
**Type of participation:** Organiser  
**Nº assistants:** 40  
**Start-End date:** 26/10/2010 - 27/10/2010
- 10** **Title of the activity:** XIII Workshop del Grupo Interdisciplinar de Sistemas Complejos (GISC)  
**Type of activity:** Workshop  
**Convening entity:** Centro Nacional de Biotecnología **Type of entity:** State agency  
**City convening entity:** Madrid, Spain  
**Type of participation:** Organiser  
**Start date:** 23/06/2016
- 11** **Title of the activity:** Dynamical processes on complex networks  
**Type of activity:** Minisymposium at Dynamics Days **Geographical area:** Non EU International  
2013 conference  
**Convening entity:** Center for Biomedical Technology, UPM  
**City convening entity:** Madrid, Spain  
**Type of participation:** Organiser  
**Start date:** 07/06/2013
- 12** **Title of the activity:** 2as Jornadas Madrileñas de Complejidad y Mecánica Estadística (C. O. M. E. 2)  
**Type of activity:** Scientific Conference **Geographical area:** Regional  
**Convening entity:** Universidad Rey Juan Carlos  
**City convening entity:** Fuenlabrada, Spain  
**Type of participation:** Organiser  
**Nº assistants:** 35  
**Start date:** 09/12/2009
- 13** **Title of the activity:** 1as Jornadas Madrileñas de Complejidad y Mecánica Estadística (C. O. M. E.)  
**Type of activity:** Scientific Conference **Geographical area:** Regional  
**Convening entity:** Universidad Rey Juan Carlos **Type of entity:** University  
**City convening entity:** Fuenlabrada, Spain



**Type of participation:** Organiser  
**Nº assistants:** 40  
**Start date:** 21/11/2008

## R&D management

- 1 Name of the activity:** 2009-2012: Member of the Seminar and Colloquia commission of the Centro de Astrobiología CSIC-INTA.  
**Type of management:** Management of organised events  
**Performed tasks:** Member of the commission.  
**Entity:** Centro de Astrobiología (CSIC-INTA)      **Type of entity:** State agency  
**Start date:** 01/02/2009      **Duration:** 4 years
- 2 Name of the activity:** 2001-2003: Popularising science at the Physics Department of Universidad Rey Juan Carlos  
**Type of management:** Management of organised events  
**Performed tasks:** Coordinator  
**Entity:** Universidad Rey Juan Carlos      **Type of entity:** University  
**Start date:** 01/01/2001      **Duration:** 5 years  
**Specific tasks:** Coordination of the scientific activities of the Physics Department of URJC at FERIA MADRID POR LA CIENCIA of the Comunidad de Madrid, and at the SEMANA DE LA CIENCIA of the Comunidad de Madrid.

## Evaluation and revision of R&D projects and articles

- 1 Performed tasks:** Referee of 2 scientific projects for the Spanish "Sistema de I+D+i".  
**Entity where activity was carried out:** Agencia Nacional de Evaluación y Prospectiva      **Type of entity:** Agencia Nacional  
**Start-End date:** 2018 - 2019
- 2 Performed tasks:** Referee of 2 scientific projects  
**Entity where activity was carried out:** Agencia Nacional de Promoción Científica y Técnica (ANPCYT) de Argentina  
**Start-End date:** 2016 - 2018
- 3 Performed tasks:** Referee of 1 scientific project  
**Entity where activity was carried out:** Departamento de Identificación y Desarrollo de Tecnologías del grupo empresarial eGauss S.L.  
**Start date:** 05/2016
- 4 Performed tasks:** Referee of scientific papers for Nature Communications, Phys. Rev. Lett., eLife, Phys. Rev. E, Theor. Ecol., Chaos, PLoS ONE, Nonlinear Dynamics, Phys. Lett. A, EPL, etc.  
**Type of activity:** Review of articles in scientific or technological journals



## Other achievements

### Stays in public or private R&D centres

- 1** **Entity:** Centro de Astrobiología CSIC-INTA.  
**City of entity:** Torrejón de Ardoz, Spain  
**Start-End date:** 01/06/2006 - 31/07/2006  
**Goals of the stay:** Guest  
**Provable tasks:** Computational modelling of the out-of-equilibrium virus competition, under the supervision of Dr. Susanna C. Manrubia.
- 2** **Entity:** Physics Department. Danish Technical University.  
**City of entity:** Lyngby, Denmark  
**Start-End date:** 10/03/2003 - 20/03/2003  
**Goals of the stay:** Guest  
**Provable tasks:** Computational modelling of the electrophysiological behavior of the pancreatic beta-cells, under the supervision of Prof. Erik Mosekilde.
- 3** **Entity:** Max Planck Institute for Complex Systems.  
**City of entity:** Dresden, Germany  
**Start-End date:** 11/11/2001 - 23/11/2001  
**Goals of the stay:** Guest  
**Provable tasks:** Scientific collaboration on the field of fractal basins, under the supervision of Prof. Juergen Kurths.
- 4** **Entity:** Physics Department. Danish Technical University.  
**City of entity:** Lyngby, Denmark  
**Start-End date:** 01/02/2001 - 15/06/2001                      **Duration:** 4 months - 15 days  
**Goals of the stay:** Guest  
**Provable tasks:** Computational modelling of the electrophysiological behavior of the pancreatic beta-cells, under the supervision of Prof. Erik Mosekilde.
- 5** **Entity:** Chaos Group. University of Maryland.  
**City of entity:** Maryland, United States of America  
**Start-End date:** 01/09/2000 - 13/09/2000  
**Goals of the stay:** Guest  
**Provable tasks:** Research on fractal basins and control of chaos under the supervision of Prof. James A. Yorke.

### Obtained grants and scholarships

- 1** **Name of the grant:** Stay of 10 days in the Physics Deptment of the Danish Technical University.  
**City awarding entity:** Lyngby, Denmark  
**Aims:** Pre-doctoral  
**Awarding entity:** Universidad Rey Juan Carlos                      **Type of entity:** University  
**Amount of the grant:** 391,93 €  
**Conferral date:** 10/03/2003    **Duration:** 10 days  
**End date:** 19/03/2003



**Entity where activity was carried out:** Danish Technical University

- 2 Name of the grant:** Stay of 15 days in the Physics Department of the Danish Technical University to finish the research started in the former 4 months.

**City awarding entity:** Lyngby, Denmark

**Aims:** Pre-doctoral

**Awarding entity:** Danish Technical University

**Conferral date:** 01/06/2001

**Duration:** 15 days

**End date:** 15/06/2001

**Entity where activity was carried out:** Danish Technical University

- 3 Name of the grant:** Stay of 4 months in the Physics Department of the Danish Technical University to develop research on the electrophysiological behavior of the insulin secreting beta-cell. The scholarship included a flight ticket and 4 monthly salaries.

**City awarding entity:** Lyngby, Denmark

**Aims:** Pre-doctoral

**Awarding entity:** MINISTERIO DE ASUNTOS EXTERIORES and Danish Foreign Affairs Ministry

**Conferral date:** 01/02/2001

**Duration:** 4 months

**End date:** 31/05/2001

**Entity where activity was carried out:** Danish Technical University

- 4 Name of the grant:** Research stay at Chaos Group of University of Maryland. The research was based on fractal theory and control of chaos.

**City awarding entity:**

**Aims:** Pre-doctoral

**Awarding entity:** University of Maryland

**Type of entity:** University

**Amount of the grant:** 350 €

**Conferral date:** 01/09/2000

**Duration:** 12 days

**End date:** 12/09/2000

**Entity where activity was carried out:** Chaos Group. University of Maryland

## Scientific societies and professional associations

- 1 Name of the society:** Member of COMPLEJIMAD: Asociación Madrileña de Ciencias de la Complejidad

**City affiliation entity:** Madrid, Spain

**Start date:** 2015

- 2 Name of the society:** Member of the Real Sociedad Española de Física

**City affiliation entity:** Madrid, Spain

**Start date:** 01/01/2005

## Prizes, mentions and distinctions

- 1 Description:** Young Researcher Award in Theoretical Physics 2005 (Premio al Investigador Novel en Física Teórica 2005)

**Awarding entity:** REAL SOCIEDAD ESPAÑOLA DE FISICA

**City awarding entity:** Granada, Spain

**Conferral date:** 14/09/2007

**Recognition linked:** I was awarded with a diploma and 1503 euros.





- 2** **Description:** Matrícula de honor en C.O.U. (magna cum laude in the last year of secondary school)  
**Awarding entity:** MINISTERIO DE EDUCACION Y CIENCIA  
**City awarding entity:** Madrid, Spain  
**Conferral date:** 1993  
**Recognition linked:** The first year of University I did not have to pay the fees.

### Obtained accreditations/recognitions

- 1** **Description:** Certificado de una trayectoria investigadora destacada a efectos del Programa de Incentivación de la Incorporación e Intensificación de la Actividad Investigadora (Programa I3).  
**Accrediting entity:** Agencia Estatal de Investigación  
**Date of recognition:** 22/05/2018
- 2** **Description:** Positive evaluation for "PROFESOR TITULAR DE FISICA APLICADA" by ANECA  
**Accrediting entity:** MINISTERIO DE EDUCACION Y CULTURA  
**Date of recognition:** 27/03/2012
- 3** **Description:** Positive evaluation for "PROFESOR CONTRATADO DOCTOR DE FISICA APLICADA" by ANEP  
**Accrediting entity:** MINISTERIO DE EDUCACION Y CULTURA  
**Date of recognition:** 12/2011
- 4** **Description:** Positive evaluation for "PROFESOR DE UNIVERSIDAD PRIVADA DE FISICA APLICADA" by ANEP  
**Accrediting entity:** MINISTERIO DE EDUCACION Y CULTURA  
**Date of recognition:** 12/2011
- 5** **Description:** "Complemento retributivo" for University staff (1100 euros).  
**Accrediting entity:** Comunidad de Madrid  
**Date of recognition:** 2007
- 6** **Description:** "Complemento retributivo" for University staff (1100 euros).  
**Accrediting entity:** Comunidad de Madrid  
**Date of recognition:** 2006
- 7** **Description:** "Complemento retributivo" for University staff (1100 euros).  
**Accrediting entity:** Comunidad de Madrid  
**Date of recognition:** 2005
- 8** **Description:** Positive evaluation for "PROFESOR AYUDANTE DOCTOR DE FISICA APLICADA" by ANEP  
**Accrediting entity:** MINISTERIO DE EDUCACION Y CIENCIA  
**Date of recognition:** 06/2004