



Gonzalo Sanchez Arriaga

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Summary of CV

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

Aerospace Engineer (5-year program, UPM, 2004), Physics Degree (5-year program, UCM, 2010), Aerospace Engineering PhD (UPM, 2009). The PhD thesis was carried out under a competitive FPI grant and received the Outstanding Thesis Award. Postdoctoral Researcher at Commissariat à l'Énergie Atomique (2 years) and UPM (3 years). Research visits at Kyushu University (Japan, 4 months), and Nice Observatory (France, 3.5 months). From 2015-2020, he held a Ramón y Cajal Grant sponsored by the Spanish Government (ranked in first position in his area) at UC3M, where he created a group on space tethers and airborne wind energy. Since November 2020, he is Associate Professor at UC3M (position opened under the Excellence Program for University Teaching Staff and the I3 certificate). Author of 57 peer-review articles (53% as first author, H-Index 14 and 546 citations from Scopus (h-Index 17 and 781 citations from Google Scholar). Advisor of 1 PhD thesis and Co-advisor of two PhD theses. Currently, advisor of 3 PhD thesis and co-advisor of a PhD thesis. Co-author of a book chapter and a book on Analytical Mechanics (McGraw-Hill, 300 pages). More than 55 presentations in international conferences and co-author of two national and European patents, and 4 registered software. Principal Investigator of 4 projects funded by the Spanish Government, two European projects, including the coordination of the FET-OPEN project E.T.PACK (3M€), and receptor of a Leonardo's grant by BBVA Foundation. Advisor of a Talent Attraction contract and an Industrial PhD. His teaching experience includes General Physics I and II at UPM, and Flight Mechanics I and II, Aeros. Auto. Vehicles, Space Environment, and Space Science at UC3M.

5 Articles published during the last 4 years:

1) G. Sanchez-Arriaga, J. Sanmartin, E. Lorenzini. Comparison of technologies for deorbiting spacecraft from low-earth-orbit at end of mission. *Acta Astronautica*. 138, pp. 536 – 542, 2017. Q1, IF: 2.227.

Analytical models to compare in a simple and effective way the deorbit technologies are shown.

2) G. Sanchez Arriaga, M. García Villalba, R. Schmehl. Modeling and dynamics of a two-line kite. *Applied Mathematical Modelling*. 47, pp. 473 – 486, 2017. Q1, IF: 2.617

Flight simulator to study the dynamic and control of 2-line kites. The simulator is part of LAKSA, an open-source software registered by UC3M



3) G. Sanchez Arriaga and E. Siminos. Relativistic quasi-solitons and embedded solitons with circular polarization in cold plasmas. *Journal of Physics A: Mathematical and Theoretical*. 50 - 18, pp. 185501, 2017. Q1, IF: 1.963.

The spectrum of circularly polarized solitary waves, excited in laser-plasma interactions, is presented. A previous work in the literature is corrected.

4) G. Sanchez Arriaga, J. Zhou; E. Ahedo; M. Martinez Sanchez; J. Ramos. Kinetic features and non-stationary electron trapping in paraxial magnetic nozzles. *Plasma Sour. Sci. & Tech.* 27, pp. 035002, 2018. Q1, IF: 4.128.

A kinetic model and simulations by using a Direct Vlasov solver of a magnetic nozzle are presented.

5) G. Sanchez-Arriaga, A. Pastor-Rodríguez; M. Sanjurjo-Rivo; R. Schmehl. A lagrangian flight simulator for airborne wind energy systems. *Applied Mathematical Modelling*. 69, pp. 665, 2019. Q1, IF: 2.841 (2018 values)

Flight simulator to study the dynamic and control of AWE systems. The simulator is part of LAKSA, an open-source software registered by UC3M



General quality indicators of scientific research

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



Gonzalo Sanchez Arriaga

Surname(s): Sanchez Arriaga
Name: Gonzalo
DNI: 75881940H
Date of birth: 08/04/1981
Gender: Male
Land line phone: (0034) 916248229
Email: gonzalo.sanchez@upm.es

Current professional situation

Employing entity: Universidad Carlos III de Madrid **Type of entity:** University
Professional category: Associate Professor
Start date: 01/11/2020
Type of contract: Civil servant **Dedication regime:** Full time
Primary (UNESCO code): 330000 - Technological Science.
Secondary (UNESCO code): 332400 - Space technology

Previous positions and activities

	Employing entity	Professional category	Start date
1	Universidad Carlos III de Madrid	Ramon y Cajal Fellow	01/11/2015
2	Universidad Carlos III de Madrid	Visiting Professor	01/03/2015
3	Universidad Politécnica de Madrid	Profesor Ayudante Doctor	28/05/2012
4	Universidad Politécnica de Madrid	Investigador postdoctoral	15/10/2011
5	Commissariat a l'energie atomique	Investigador postdoctoral	01/10/2009
6	Universidad Politécnica de Madrid	Becario FPI	01/08/2005

- Employing entity:** Universidad Carlos III de Madrid **Type of entity:** University
Professional category: Ramon y Cajal Fellow
Start-End date: 01/11/2015 - 31/10/2020 **Duration:** 5 years
- Employing entity:** Universidad Carlos III de Madrid **Type of entity:** University
Professional category: Visiting Professor
Start-End date: 01/03/2015 - 31/10/2015 **Duration:** 8 months
- Employing entity:** Universidad Politécnica de Madrid **Type of entity:** University
Department: Fisica Aplicada, Universidad Politécnica de Madrid
City employing entity: Madrid, Spain



Professional category: Profesor Ayudante Doctor
Educational Management (Yes/No): Yes
Start-End date: 28/05/2012 - 28/02/2015
Type of contract: Temporary employment contract
Dedication regime: Full time

4 **Employing entity:** Universidad Politécnica de Madrid
Type of entity: University
City employing entity: Madrid, Community of Madrid, Spain
Professional category: Investigador postdoctoral
Educational Management (Yes/No): No
Start date: 15/10/2011
Duration: 3 months
Type of contract: Temporary employment contract
Dedication regime: Part time

5 **Employing entity:** Commissariat a l'energie atomique
Type of entity: State agency
City employing entity: Paris, Île de France, France
Professional category: Investigador postdoctoral
Educational Management (Yes/No): No
Start date: 01/10/2009
Duration: 2 years
Type of contract: Temporary employment contract
Dedication regime: Full time

6 **Employing entity:** Universidad Politécnica de Madrid
Type of entity: University
City employing entity: Madrid, Community of Madrid, Spain
Professional category: Becario FPI
Educational Management (Yes/No): No
Start date: 01/08/2005
Duration: 4 years
Type of contract: Grant-assisted student (pre or post-doctoral, others)
Dedication regime: Full time



Education

University education

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

- 1 **University degree:** Higher degree
Name of qualification: Licenciado en Ciencias Físicas
City degree awarding entity: Madrid, Community of Madrid, Spain
Degree awarding entity: Universidad Complutense **Type of entity:** University de Madrid
Date of qualification: 06/2010
- 2 **University degree:** Higher degree
Name of qualification: Ingeniero Aeronáutico
City degree awarding entity: Madrid, Community of Madrid, Spain
Degree awarding entity: Universidad Politécnica de Madrid **Type of entity:** University Madrid
Date of qualification: 16/11/2004
Average mark: Good

Doctorates

Doctorate programme: Doctor
Degree awarding entity: Universidad Politécnica de Madrid **Type of entity:** University Madrid
City degree awarding entity: Madrid, Community of Madrid, Spain
Date of degree: 07/07/2009
DEA awarding entity: Universidad Politécnica de Madrid
Date DEA was awarded: 06/2006
European doctorate: Yes **Date of certificate:** 07/07/2009
Thesis title: Nonlinear low-frequency wavefront generated by electrodynamic tethers
Thesis director: Juan Sanmartín Losada
Obtained qualification: Sobresaliente cum Laude
Special doctorate award: Yes **Date of award:** 28/07/2010

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

- 1 **Type of training:** Course
Training title: II Curso de Comercialización de Tecnologías UPM Innovatech
City awarding entity: Madrid, Community of Madrid, Spain
Awarding entity: Universidad Politécnica de Madrid **Type of entity:** University
Training manager: CAIT
End date: 29/10/2013 **Duration in hours:** 44 hours



- 2** **Type of training:** Course
Training title: Digital Signal Processing
City awarding entity: Madrid, Community of Madrid, Spain
Awarding entity: Universidad Politécnica de Madrid **Type of entity:** University
Training manager: Prof. Gelman
Duration in hours: 24 hours

Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
German		A1	A1	A1	A1
French		A1	A1	A1	A1
English		C1	C1	C1	C1

Teaching experience

General teaching experience

- 1** **Name of the course:** Space Science
University degree: Master in Space Engineering
Start date: 2020 **End date:** 2021
Entity: Universidad Carlos III de Madrid **Type of entity:** University
- 2** **Name of the course:** Space Environment
University degree: Master in Space Engineering
Start date: 2019 **End date:** 2021
Entity: Universidad Carlos III de Madrid **Type of entity:** University
- 3** **Type of teaching:** Official teaching
Name of the course: Flight Mechanics I
Type of programme: Bachelor's degree
University degree: Degree in Aerospace Engineering
Start date: 2018 **End date:** 2021
Entity: Universidad Carlos III de Madrid **Type of entity:** University
- 4** **Type of teaching:** Official teaching
Name of the course: Flight Mechanics II
Type of programme: Bachelor's degree
University degree: Degree in Aerospace Engineering
Start date: 2018 **End date:** 2021
Entity: Universidad Carlos III de Madrid **Type of entity:** University
- 5** **Type of teaching:** Official teaching
Name of the course: Introduction to Astronomy
Type of programme: Bachelor's degree
University degree: Degree in Aerospace Engineering



Start date: 2016

Entity: Universidad Carlos III de Madrid

End date: 2021

Type of entity: University

6 Name of the course: Aerospace Autonomous Systems

University degree: Master in Aeronautical Engineering

Start date: 2015

Entity: Universidad Carlos III de Madrid

End date: 2021

Type of entity: University

7 Type of teaching: Official teaching

Name of the course: Flight Mechanics

Type of programme: Bachelor's degree

University degree: Degree in Aerospace Engineering

Start date: 2015

Entity: Universidad Carlos III de Madrid

End date: 2019

Type of entity: University

8 Type of teaching: Official teaching

Name of the course: Vehículos Aeroespaciales: Complementos II

Type of programme: Bachelor's degree

University degree: Degree in Aerospace Engineering

Start date: 2015

Entity: Universidad Carlos III de Madrid

End date: 2017

Type of entity: University

9 Type of teaching: Official teaching

Name of the course: Fisica I

Type of programme: Engineering

Type of subject: Obligatory

University degree: Grado en Ingeniería Aeroespacial

Course given: 2012-15

Start date: 2012

Type of hours/ ECTS credits: Credits

Hours/ECTS credits: 6

Entity: Universidad Politécnica de Madrid

Type of teaching: In person theory

End date: 2015

Type of entity: University

10 Type of teaching: Official teaching

Name of the course: Fisica II

Type of programme: Engineering

Type of subject: Obligatory

University degree: Grado en Ingeniería Aeroespacial

Course given: 2012-14

Start date: 2012

Type of hours/ ECTS credits: Credits

Hours/ECTS credits: 6

Entity: Universidad Politécnica de Madrid

Type of teaching: In person theory

End date: 2015

Type of entity: University

11 Type of teaching: Official teaching

Name of the course: Mecanica Analitica

Type of programme: Engineering

Type of subject: Optional

University degree: Grado en Ingeniería Aeroespacial

Start date: 2013

Type of hours/ ECTS credits: Credits

Type of teaching: In person theory

End date: 2014



Hours/ECTS credits: 3

Entity: Universidad Politécnica de Madrid

Type of entity: University

12 Type of teaching: Official teaching

Name of the course: Física II

Type of programme: Engineering

Type of subject: Core

University degree: Ingeniero Aeronáutico

Start date: 2007

Type of teaching: Laboratory work

End date: 2009

Type of hours/ ECTS credits: Hours

Hours/ECTS credits: 120

Entity: Universidad Politécnica de Madrid

Type of entity: University

Department: Departamento de Física Aplicada a la Ingeniería Aeronáutica

Experience supervising doctoral thesis and/or final year projects

1 Project title: Development and Testing of a Deployment Mechanism for a Low-Cost Scientific Mission with an Inflatable Electrodynamic Loop Tether

Type of project: Minor thesis

Entity: Universidad Carlos III de Madrid

Type of entity: University

Student: Niklas Reisenauer

Date of reading: 2021

2 Project title: Application of aircraft's flight testing techniques to the aerodynamic characterization of power kites

Type of project: Doctoral thesis

Entity: Universidad Carlos III de Madrid

Type of entity: University

Student: Ricardo Borobia Moreno

Date of reading: 2021

3 Project title: A Robust Dynamical Model of a Flexible Space Tether

Type of project: Minor thesis

Entity: Universidad Carlos III de Madrid

Type of entity: University

Student: Gabriel de Haro Pizarroso

Date of reading: 2020

4 Project title: Analysis of Collision Probability of Electrodynamic Tethers in Deorbiting Scenarios

Type of project: Minor thesis

Entity: Universidad Carlos III de Madrid

Type of entity: University

Student: Leyre Hernandez

Date of reading: 2020

5 Project title: Flight Testing Rig for Airborne wind Energy Systems

Type of project: Minor thesis

Entity: Universidad Carlos III de Madrid

Type of entity: University

Student: Daniel Ramiro Rebollo

Date of reading: 2019

6 Project title: Real Time Control For Airborne Wind Energy Simulators

Type of project: Minor thesis

Entity: Universidad Carlos III de Madrid

Type of entity: University



Student: Alberto Jose Garcia Muñoz
Date of reading: 2019

- 7** **Project title:** Design and Manufacturing of a Control System for a Dual-Line Kite
Type of project: End of course project
Entity: Universidad Carlos III de Madrid **Type of entity:** University
Student: Marta Poole
Date of reading: 2018
- 8** **Project title:** Design of a mechanical assembly for power kites automatic control
Type of project: End of course project
Entity: Universidad Carlos III de Madrid **Type of entity:** University
Student: Alejandro Huerta
Date of reading: 2018
- 9** **Project title:** Modeling and simulation of a train of kites
Type of project: End of course project
Entity: Universidad Carlos III de Madrid **Type of entity:** University
Student: Jose Antonio Serrano Iglesias
Date of reading: 2018
- 10** **Project title:** Path Controller Implementation for Airborne Wind Energy Systems
Type of project: End of course project
Entity: Universidad Carlos III de Madrid **Type of entity:** University
Student: Guillermo Escribano
Date of reading: 2018
- 11** **Project title:** Control System and Hardware-related Elements Applied to Flight Testing of Airborne Wind Energy Systems
Type of project: Minor thesis
Entity: Universidad Carlos III de Madrid **Type of entity:** University
Student: Abel Otero
Date of reading: 2018
- 12** **Project title:** Existence of Solitary Waves in the Hall-MHD Model with Finite Larmor Radius Effect
Type of project: End of course project
Entity: Universidad Carlos III de Madrid **Type of entity:** University
Student: Enrique Bello Benítez
Date of reading: 2017
- 13** **Project title:** Flight Testing of Power Kites
Type of project: End of course project
Entity: Universidad Carlos III de Madrid **Type of entity:** University
Student: Iciar Martín Mejias
Date of reading: 2017
- 14** **Project title:** Integration of a Fuel Cell in a Remotely Piloted Aircraft
Type of project: Minor thesis
Entity: Universidad Carlos III de Madrid **Type of entity:** University
Student: Ruben Garcia Maeso
Date of reading: 2017



- 15** **Project title:** Dynamics and control of acrobatic kites
Type of project: End of course project
Entity: Universidad Carlos III de Madrid **Type of entity:** University
Student: Pablo Muñoz de la Flor
Date of reading: 2016
- 16** **Project title:** On-board instruments and flight tests of giant kites applied to wind power generation
Type of project: Minor thesis
Entity: Politecnico de Torino **Type of entity:** University
Student: Alessandro Serino
Date of reading: 2016
- 17** **Project title:** Bare-Tether Cathodic Contact through Thermionic Emission by Low-W Materials
Type of project: Doctoral thesis
Co-director of thesis: Juan Sanmartín Losada
Entity: Universidad Politécnica de Madrid **Type of entity:** University
Student: X. Chen
Date of reading: 01/07/2015
- 18** **Project title:** Bare-tape scaling laws for de-orbit missions in a space debris environment
Type of project: Doctoral thesis
Co-director of thesis: Juan Sanmartin Losada
Entity: Universidad Politécnica de Madrid **Type of entity:** University
Student: Shaker Bayajid Khan
Obtained qualification: Sobresaliente
Date of reading: 07/10/2014
- 19** **Project title:** Preliminary mission design of payload adapters deorbiting using electrodynamic tethers
Type of project: Minor thesis
Entity: Universidad Politécnica de Madrid **Type of entity:** University
Student: Mikhail Bezdenjnykh Vasenin
Obtained qualification: 8
Date of reading: 25/09/2014
- 20** **Project title:** Dinámica y Control de Cometas con bridas de geometría variable
Type of project: End of course project
Entity: Universidad Politécnica de Madrid **Type of entity:** University
Student: Jorge Alonso Pardo
Obtained qualification: 10
Date of reading: 13/03/2014
- 21** **Project title:** Dinámica y control de cometas de una línea
Type of project: End of course project
Entity: Universidad Politécnica de Madrid **Type of entity:** University
Student: Luis Salord Losantos
Obtained qualification: 10
Date of reading: 11/10/2013



Student tutorials

- 1 Name of the programme:** Doctorate
Entity: Universidad Politécnica de Madrid **Type of entity:** University
City of entity: Pisa, Italy
Frequency of the activity: 1
Number of tutored students: 1
- 2 Name of the programme:** Mobility programme
Entity: Purdue University **Type of entity:** University
Frequency of the activity: 1
Number of tutored students: 1
- 3 Name of the programme:** BETs project grant
Entity: Universidad Politécnica de Madrid **Type of entity:** University
Frequency of the activity: 1
Number of tutored students: 1

Other activities/achievements not included above

- 1 Description of the activity:** Course on Electrodinamic Tethers (7.5 hours, invited by BIT)
Organising entity: Beijing Institute of Technology (BIT) **Type of entity:** University Research Institute
End date: 01/12/2020
- 2 Description of the activity:** Preparation of the technical report of a fellowship grant for the student D. Lorenzon. The grant was given by the CONICET (Argentina) and the PhD thesis "Simulaciones numéricas de sondas de Langmuir cilíndricas con códigos de Vlasov directo" will start in 2015 (co-advised by S. Elaskar and G. Sánchez-Arriaga)
City of activity: Córdoba, Argentina
Organising entity: Universidad de Cordoba (Argentina)



Scientific and technological experience

Research and development groups/teams

- 1 Name of the group:** Grupo de Investigación en Ingeniería Aeroespacial
Type of collaboration: Co-authorship of projects and their development
Affiliation entity: Universidad Carlos III de Madrid **Type of entity:** University
Start date: 2015
- 2 Name of the group:** Grupo de Investigación en Fusión Inercial y Física de Plasmas
Name of principal investigator: Fco. Javier Sanz Recio
City of group: Madrid, Community of Madrid, Spain
Affiliation entity: Universidad Politécnica de Madrid
Start date: 08/02/2007

Scientific or technological activities

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

- 1 Name of the project:** Industrial PhD (Comunidad de Madrid)
Type of project: Industrial research
Degree of contribution: Scientific coordinator
Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University
Name principal investigator (PI, Co-PI...): Gonzalo Sanchez-Arriaga; Sergio García
Nº of researchers: 2 **Nª people/year:** 2
Type of participation: Principal investigator
Name of the programme: Doctorado Industrial
Code according to the funding entity: IND2019/TIC-17198
Start-End date: 01/02/2020 - 31/01/2023 **Duration:** 3 years
Participating entity/entities: Sener Ingeniería y Sistemas, S.A. ; Universidad Carlos III de Madrid
Total amount: 90.000 €
- 2 Name of the project:** Desarrollo de sistemas de generación de energía con sistemas aerotransportados
Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University
Name principal investigator (PI, Co-PI...): Gonzalo Sanchez Arriaga
Nº of researchers: 1
Start-End date: 15/10/2021 - 15/01/2023
Total amount: 85.000 €
- 3 Name of the project:** A Consumable-less Propulsion System Based on a Bare-Photovoltaic Tether
Degree of contribution: Coordinator of total project, network or consortium
Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University
Name principal investigator (PI, Co-PI...): Gonzalo Sanchez Arriaga



Nº of researchers: 3

Funding entity or bodies:

European Space Agency

Type of participation: Co-ordinator

Name of the programme: Early Technology Development

Start-End date: 14/01/2022 - 13/01/2023

Duration: 1 year

Total amount: 175.000 €

4 Name of the project: Madrid-Flight-on-Chip

Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University

Nº of researchers: 20

Start-End date: 01/01/2019 - 31/12/2022

5 Name of the project: Electrodinamic Tether Technology for Passive Consumable-less Deorbit Kit

Type of project: Research and development, including transfer **Geographical area:** European Union

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

Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University

Nº of researchers: 20

Type of participation: Co-ordinator

Name of the programme: H2020-FET-OPEN

Code according to the funding entity: 828902

Start-End date: 01/03/2019 - 30/05/2022

Duration: 3 years - 3 months

Participating entity/entities: Advanced Thermal Devices; IKTS Fraunhofer; Sener Ingenieria y Sistemas, S.A. ; Universidad Carlos III de Madrid; Universidad Técnica de Dresden; Universidad de Padova

Total amount: 3.000.000 €

6 Name of the project: Business Model for Orbital Maneuvering kit

Type of project: Research and development, including transfer **Geographical area:** European Union

Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University

Nº of researchers: 6

Type of participation: Principal investigator

Name of the programme: Innovation Launchpad

Code according to the funding entity: 101034874

Start-End date: 01/05/2021 - 30/04/2022

Duration: 1 year

Participating entity/entities: Euroconsult; SENER Aerospace; Universidad Carlos III de Madrid

Total amount: 100.000 €

Sub-project amount: 30.000 €

7 Name of the project: Deorbiting of space debris by electrodynamic tethers

Type of project: Technical viability study

Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University

Name principal investigator (PI, Co-PI....): Gonzalo Sánchez-Arriaga

Nº of researchers: 1

Funding entity or bodies:

Ministerio de Economía y Competitividad

Name of the programme: Ramon y Cajal



Code according to the funding entity: RYC-2014-15357

Start-End date: 01/10/2015 - 31/10/2020

Duration: 5 years

Total amount: 40.000 €

8 Name of the project: NANOSTAR: Plataforma colaborativa para la creación de nano satélites estudiantiles europeos

Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University

Start-End date: 01/04/2018 - 30/09/2020

9 Name of the project: Atraction of Talent Programme (Comunidad de Madrid)

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

Degree of contribution: Scientific coordinator

Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University

Name principal investigator (PI, Co-PI....): Gonzalo Sanchez-Arriaga; Sergio García

Nº of researchers: 2

Nª people/year: 2

Type of participation: Principal investigator

Name of the programme: Talent Atraction Programme (Comunidad de Madrid)

Code according to the funding entity: 2018T2/IND11352

Start-End date: 01/04/2019 - 31/01/2020

Duration: 3 years

Participating entity/entities: Universidad Carlos III de Madrid

Total amount: 80.000 €

10 Name of the project: MINOTOR: Magnetic NOzzle thruster with elecTron cyclOtron Resonance

Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University

Name principal investigator (PI, Co-PI....): Mario Merino

Start-End date: 01/01/2017 - 31/12/2019

Total amount: 1.485.809 €

11 Name of the project: Simulación y Ensayos en Vuelo de Cometas de Tracción Aplicadas a la Generación de Energía Eólica

Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University

Name principal investigator (PI, Co-PI....): Gonzalo Sanchez Arriaga; Ricardo Borobia Moreno; Roland Schmehl

Nº of researchers: 3

Funding entity or bodies:

CENTRO DE ACUSTICA APLICADA Y EVALUACION NO DESTRUCTIVA

Type of entity: Associations and Groups

Type of participation: Principal investigator

Start-End date: 01/01/2016 - 31/12/2018

Total amount: 53.240 €

12 Name of the project: FABRICACION Y ENSAYOS DE AMARRAS ESPACIALES CON BAJA FUNCION DE TRABAJO

Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University

Name principal investigator (PI, Co-PI....): Gonzalo Sanchez Arriaga

Nº of researchers: 1



Type of participation: Principal investigator
Name of the programme: Europa Excelencia
Code according to the funding entity: ESP2017-82092-ERC
Start-End date: 01/12/2017 - 30/11/2018
Total amount: 68.181 €

13 Name of the project: CONSOLIDACION DE CONSORCIO EUROPEO EN AMARRAS ESPACIALES

Entity where project took place: Universidad Carlos III de Madrid
Type of entity: University

Name principal investigator (PI, Co-PI....): Gonzalo Sanchez Arriaga

Nº of researchers: 7

Type of participation: Principal investigator

Name of the programme: Europa Investigación

Code according to the funding entity: EUIN2017-85825

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

Total amount: 25.000 €

14 Name of the project: Generación Limpia de Energía con Cometas de Tracción

Entity where project took place: Universidad Carlos III de Madrid
Type of entity: University

Name principal investigator (PI, Co-PI....): Gonzalo Sanchez-Arriaga

Nº of researchers: 1

Type of participation: Principal investigator

Name of the programme: Ayudas Fundación BBVA a Investigadores y Creadores Culturales

Code according to the funding entity: IN[15]_TIC_ING_0313

Start-End date: 01/11/2015 - 31/10/2016

Total amount: 39.658 €

15 Name of the project: Análisis dinámico, propagación orbital avanzada y simulación de sistemas espaciales complejos

Entity where project took place: Universidad Politécnica de Madrid
Type of entity: University

City of entity: Spain

Name principal investigator (PI, Co-PI....): Jesus Pelaez Alvarez

Nº of researchers: 16

Funding entity or bodies:

Ministerio de Economía y Competitividad

Start date: 21/11/2014

Total amount: 145.200 €

16 Name of the project: Inestabilidades Hidrodinámicas en Fusión Termonuclear Controlada por Confinamiento Inercial

Entity where project took place: Universidad Politécnica de Madrid
Type of entity: University

City of entity: Spain

Name principal investigator (PI, Co-PI....): Fco. Javier Sanz Recio

Nº of researchers: 8

Funding entity or bodies:

Ministerio de Ciencia e Innovación (ENE2011-28489)

Code according to the funding entity: C11010501

Start date: 01/01/2012



- 17** **Name of the project:** BETs: Propellantless deorbiting of space debris by bare electrodynamic tether
Entity where project took place: Universidad Politécnica de Madrid **Type of entity:** University
City of entity: Unknown
Name principal investigator (PI, Co-PI....): Juan Ramon Sanmartin Losada
N° of researchers: 7
Funding entity or bodies: Comisión Europea **Type of entity:** .
City funding entity: Madrid, Community of Madrid, Spain
Code according to the funding entity: E100105908
Start date: 16/12/2010
- 18** **Name of the project:** Generation et Optimisation de Sources de Protons et ions Energetiques par Lasers ultra courts, ultra intenses et a tres haut contraste
Geographical area: National
Entity where project took place: Commissariat à l'énergie atomique
City of entity: France
Name principal investigator (PI, Co-PI....): T. Ceccotti
N° of researchers: 7
Funding entity or bodies: Agence Nationale de la Recherche
Code according to the funding entity: ANR-08-BLAN-0072-03
Start date: 01/10/2009
Dedication regime: Full time
- 19** **Name of the project:** Amarras espaciales electrodinámicas
Geographical area: National
Degree of contribution: Researcher
Entity where project took place: Universidad Politécnica de Madrid **Type of entity:** University
City of entity: Spain
Name principal investigator (PI, Co-PI....): Juan Ramon Sanmartin Losada
N° of researchers: 4
Funding entity or bodies: MINISTERIO DE EDUCACION Y CIENCIA
City funding entity: Spain
Code according to the funding entity: ESP2005- 01511
Start date: 01/08/2005
Dedication regime: Full time

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

- 1** **Name of the project:** Convenio de colaboración para la creación de la cátedra UC3M-SENER Aeroespacial
Entity where project took place: Universidad Carlos III de Madrid
Degree of contribution: Managing coordinator
Entity where project took place: Universidad Carlos III de Madrid **Type of entity:** University
Name principal investigator (PI, Co-PI...): E. Ahedo; G. Sánchez-Arriaga; I. Merlgar; J. R. Villa
Funding entity or bodies:
 Sener Ingenieria y Sistemas, S.A. **Type of entity:** Business
City funding entity: Tres Cantos, Community of Madrid, Spain
Type of project: Cooperation
Start date: 14/03/2018 **Duration:** 2 years
Total amount: 60.000 €
- 2** **Name of the project:** Development of an advanced axisymmetric model of the full plasma discharge in the Helicon Plasma Thruster
Degree of contribution: Researcher
Name principal investigator (PI, Co-PI...): Eduardo Ahedo Galilea
Nº of researchers: 5
Funding entity or bodies:
 Airbus **Type of entity:** Business
City funding entity: Getafe, Community of Madrid, Spain
Start date: 01/12/2016 **Duration:** 2 years - 10 months
Total amount: 90.000 €

Results**Industrial and intellectual property**

- 1** **Title registered industrial property:** BETsMA v2
Type of industrial property: Registro de Software **Author's rights:** Yes
Inventors/authors/obtainers: Gonzalo Sanchez Arriaga
Entity holder of rights: Universidad Carlos III de Madrid
Country of inscription: Spain
Date of register: 18/12/2020
- 2** **Title registered industrial property:** Lagrangian Kite Simulators LAKSA
Type of industrial property: Registro de Software **Author's rights:** Yes
Inventors/authors/obtainers: A Pastor Rodríguez; Gonzalo Sanchez Arriaga
Entity holder of rights: Universidad Carlos III de Madrid
Nº of application: M-007673/2017
Country of inscription: Spain
Date of register: 28/11/2017



- 3 Title registered industrial property:** Flexible Single-Line Kite Simulator (KITEFLEX)
Type of industrial property: Registro de Software **Author's rights:** Yes
Inventors/authors/obtainers: A Pastor Rodríguez; Gonzalo Sanchez Arriaga
Entity holder of rights: Universidad Carlos III de Madrid
Nº of application: M-007734/2016
Country of inscription: Spain
Date of register: 30/11/2016
- 4 Title registered industrial property:** SISTEMA DE GENERACIÓN DE POTENCIA ELÉCTRICA EN ÓRBITA POR MEDIO DE CABLES CONDUCTORES FLOTANTES
Type of industrial property: Patent of invention
Inventors/authors/obtainers: Claudio Bombardelli; Gonzalo Sanchez Arriaga
Entity holder of rights: UC3M and UPM
Nº of application: P201531648
Country of inscription: Spain, Community of Madrid
Date of register: 13/11/2015
- 5 Title registered industrial property:** SISTEMA DE PROPULSIÓN EN ÓRBITA POR MEDIO DE CABLES CONDUCTORES FLOTANTES
Type of industrial property: Patent of invention
Inventors/authors/obtainers: Gonzalo Sanchez Arriaga; Claudio Bombardelli
Entity holder of rights: UC3M and UPM
Nº of application: P201531649
Country of inscription: Spain, Community of Madrid
Date of register: 13/11/2015
- 6 Title registered industrial property:** Kinetic Langmuir Probe Software (Kilaps)
Type of industrial property: Registro de Software **Author's rights:** Yes
Inventors/authors/obtainers: Gonzalo Sanchez Arriaga; D. Pastor Moreno
Entity holder of rights: Universidad Politécnica de Madrid
Nº of application: M-005370/2014
Country of inscription: Spain
Date of register: 26/12/2014
- 7 Title registered industrial property:** Bare Electrodynamic Tether Mission Analysis (BETsMA)
Type of industrial property: Registro de Software **Author's rights:** Yes
Inventors/authors/obtainers: Gonzalo Sanchez Arriaga; S Khan; A. Sanchez Torres; J. Williams; D. Blash; F. Garcia Quirós; J. Carrasco; R. Rosta
Entity holder of rights: Universidad Politécnica de Madrid
Nº of application: M-005377/2014
Country of inscription: Spain
Date of register: 19/12/2014
Conferral date: 19/12/2014



Scientific and technological activities

Scientific production

Publications, scientific and technical documents

- 1** Sergio García Gonzalez; G. Sanchez Arriaga. Attitude Determination and Control for the Deployment Preparation Phase of a Space Tether Mission. *Acta Astronautica*. 193, pp. 381 - 394. 2022.
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 2** Iván Castro Fernández; Ricardo Borobia Moreno; Rauno Cavallaro; G. Sanchez Arriaga. Three-Dimensional Unsteady Aerodynamic Analysis of a Rigid-Framed Delta Kite Applied to Airborne Wind Energy. *Energies*. 14, pp. 8080. 2022.
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 3** M. Tajmar; G. Sanchez-Arriaga. A bare-photovoltaic tether for consumable-less and autonomous space propulsion and power generation. *Acta Astronautica*. 180, pp. 350 - 360. 2021.
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 4** Ricardo Borobia Moreno; D. Remiro-Rebollo; Roland Schmehl; Gonzalo Sanchez Arriaga. Identification of kite aerodynamic characteristics using the estimation before modeling technique. *Wind Energy*. 24, pp. 596 - 608. 2021.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 5** L. Chiabo; Sadaf Shahsavani; G. Sanchez Arriaga. Kinetic analysis of the plasma sheath around an electron-emitting object with elliptic cross section. *Physical Review E*. 104, pp. 055204. 2021.
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 6** L. Chiabo; G. Sanchez Arriaga. Limitations of stationary Vlasov-Poisson solvers in probe theory. *Journal of Computational Physics*. 438, pp. 110366. 2021.
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 7** G. Sanchez-Arriaga; J. Serrano-Iglesias; R. Leuthold; M. Diehl. Modeling and Natural Mode Analysis of Tethered Multi-Aircraft Systems. *Journal of Guidance, Control, and Dynamics*. 2021. Available on-line at: <10.2514/1.G005075>.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 8** Sadaf Shahsavani; Xin Chen; G. Sanchez Arriaga. Parametrization of current-voltage characteristics and operation domains of cylindrical emissive probes in collisionless Maxwellian plasmas at rest. *Plasma Physics and Controlled Fusion*. 63, pp. 110366. 2021. Available on-line at: <<https://doi.org/10.1088/1361-6587/ac255>>.
Type of production: Scientific paper **Format:** Journal



Corresponding author: No

- 9** J. Zhou; G. Sánchez-Arriaga; E. Ahedo. Time-dependent expansion of a weakly-collisional plasma beam in a paraxial magnetic nozzle. *Plasma Sources Science and Technology*. 30, pp. 045009. 2021.
Type of production: Scientific paper **Format:** Journal
- 10** G. Sanchez-Arriaga. Electrical model and optimal design scheme for low work-function tethers in thrust mode. *Aerospace Science and Technology*. 96 - 105519, pp. 1 - 10. 2020.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 11** G. Sanchez-Arriaga; S. Naghdi. Ionospheric Experiment with a Low Work Function Tether Loop. *JOURNAL OF GUIDANCE, CONTROL, AND DYNAMICS*. 43 - 2, pp. 212 - 221. 2020.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 12** G. Sanchez-Arriaga; S. Naghdi; K. Waetzig; J. Schilm; E. C. Lorenzini; M. Tajmar; E. Urgoiti; L. Tarabini; J. F. Plaza; A. Post. The E.T.PACK project: Towards a fully passive and consumable-less deorbit kit based on low-work-function tether technology. *Acta Astronautica*. 177, pp. 821 - 827. 2020.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 13** S. Naghdi; K. Nesovic; G. Sanchez-Arriaga; H. Y. Song; S. W. Kim; K. Y. Rhee; V. Miskovic-Stankovic. The effect of cesium dopant on APCVD graphene coating on copper. *Journal of Materials Research and Technology*. 9 - 5, pp. 9798 - 9812. 2020.
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 14** J. F. Plaza; G. Meiro; A. Post; R. Perez-Casero; F. J. Palomares; P. Tejedor; S. Naghdi; A. Varez; G. Sanchez-Arriaga. Trade-off analysis of C12A7:e⁻ deposition techniques applied to Low Work Function Tethers. *Acta Astronautica*. 177, pp. 806 - 812. 2020.
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 15** S. Naghdi; G. Sánchez-Arriaga; K. Y. Rhee. Tuning the work function of graphene toward application as anode and cathode. *Journal of Alloys and Compounds*. 805, pp. 1117 - 1134. Elsevier, 17/07/2019.
Type of production: Scientific paper **Format:** Journal
- 16** G. Sanchez-Arriaga; A. Pastor-Rodríguez; M. Sanjurjo-Rivo; R. Schmehl. A lagrangian flight simulator for airborne wind energy systems. *Applied Mathematical Modelling*. 69, pp. 665 - 684. 05/2019.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 17** E. Bello-Benítez; G. Sanchez-Arriaga; T. Passot; D. Laveder; E. Siminos. Structure and evolution of magnetohydrodynamic solitary waves with Hall and finite Larmor radius effects. *Physical Review E*. 99 - 2, pp. 023202. 08/02/2019.
Type of production: Scientific paper **Format:** Journal
- 18** Ricardo Borobia Moreno; Gonzalo Sanchez Arriaga; Alessandro Serino; Roland Schmehl. Flight Path Reconstruction and Flight Test of Four-line Power Kites. *Journal of Guidance Control and Dynamics*. 07/08/2018.
Type of production: Scientific paper **Format:** Journal



- 19** Gonzalo Sanchez Arriaga; Alejandro Pastor Rodríguez; Ricardo Borobia Moreno; Roland Schmehl. A constraint-free ight simulator package for airborne wind energy systems. *Journal of Physics: Conference Series*. 1037, IOP, 19/06/2018.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 20** Gonzalo Sanchez Arriaga; Jiewei Zhou; Eduardo Ahedo; Manuel Martinez Sanchez; Jesus Ramos. Kinetic features and non-stationary electron trapping in paraxial magnetic nozzles. *Plasma Sources Science and Technology*. 27, pp. 035002. 26/02/2018.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 21** Gonzalo Sanchez Arriaga; Xin Chen. Modeling and Performance of Electrodynamic Low-Work-Function Tethers with Photoemission Effects. *Journal of Propulsion and Power*. 34 - 1, pp. 213 - 220. 01/01/2018.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 22** Xin Chen; Gonzalo Sanchez Arriaga. Current-Voltage and Floating-Potential characteristics of cylindrical emissive probes from a full-kinetic model based on the orbital motion theory. *IOP Conf. Series: Journal of Physics: Conf. Series*. 958, pp. 012001. 2018.
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 23** Xin Chen; Gonzalo Sanchez-Arriaga. Kinetic features of collisionless sheaths around polarized cylindrical emitters from the orbital motion theory. *Physics of Plasmas*. 24 - 10, pp. 103515. 02/10/2017.
Type of production: Scientific paper **Format:** Journal
- 24** G. Sanchez-Arriaga; J. Sanmartin; E. Lorenzini. Comparison of technologies for deorbiting spacecraft from low-earth-orbit at end of mission. *Acta Astronautica*. 138, pp. 536 - 542. 01/09/2017.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 25** Alejandro Pastor Rodríguez; Gonzalo Sanchez Arriaga; Manuel Sanjurjo Rivo. Modeling and stability analysis of tethered kites at high-altitudes. *Journal of Guidance, Control, and Dynamics*. 40 - 8, pp. 1892 - 1901. The American Institute of Aeronautics and Astronautics, 01/08/2017.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 26** Gonzalo Sanchez Arriaga; Manolo García Villalba; Roland Schmehl. Modeling and dynamics of a two-line kite. *Applied Mathematical Modelling*. 47, pp. 473 - 486. 17/07/2017.
Type of production: Scientific paper **Format:** Journal
- 27** Gonzalo Sanchez Arriaga; Evangelos Siminos. Relativistic quasi-solitons and embedded solitons with circular polarization in cold plasmas. *Journal of Physics A: Mathematical and Theoretical*. 50 - 18, pp. 185501. 31/03/2017.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 28** J Sanmartin; M. Charro; H. Garret; G. Sanchez-Arriaga; A. Sanchez-Torres. Analysis of Tether-Mission Concept for Multiple Flybys of Moon Europa. *Journal of Propulsion and Power*. 10.2514/1.B36205 - 2, pp. 338 - 342. 03/2017.
Type of production: Scientific paper **Format:** Journal

- 29** G. Sanchez-Arriaga; X. Chen; E. Lorenzini. Optimal Design and Deorbiting Performance of Thermionic Tethers in Geostationary Transfer Orbits. *Journal of Propulsion and Power*. doi:10.2514/1.B3620 - 2, pp. 425 - 432. 03/2017.
Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes
- 30** X. Chen; G. Sanchez-Arriaga. Orbital Motion Theory and Operational Regimes for Cylindrical Emissive Probes. *Physics of Plasmas*. 24 - 2, pp. 023804. 02/2017.
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 31** J. Sanmartin; X. Chen; G. Sanchez-Arriaga. Analysis of Thermionic Bare Tether Operation Regimes in Passive Mode. *Physics of Plasmas*. 24 - 1, pp. 013515. 01/2017.
Type of production: Scientific paper **Format:** Journal
Corresponding author: No
- 32** J. Sanmartin; A. Sanchez-Torres; S. B. Khan; G. Sánchez-Arriaga; M. Charro. Optimum sizing of bare-tape tethers for de-orbiting satellites at end of mission. *Advances in Space Research*. 56, pp. 1485 - 1492. 01/10/2015. Available on-line at: <<http://dx.doi.org/10.1016/j.asr.2015.06.030>>.
Type of production: Scientific paper **Format:** Journal
- 33** J. Alonso-Pardo; G. Sanchez-Arriaga. Kite model with bridle control for wind power generation. *Journal of Aircraft*. 52 - 3, pp. 917 - 923. 01/05/2015.
Type of production: Scientific paper **Format:** Journal
- 34** G. Sánchez-Arriaga; E. Siminos; V. Saxena; I. Kourakis. Relativistic breather-type solitary waves with linear polarization in cold plasmas. *Physical Review E*. 91 - 033102, 05/03/2015.
Type of production: Scientific paper **Format:** Journal
- 35** G. Sanchez-Arriaga; C. Bombardelli; X. Chen. Impact of nonideal effects on bare electrodynamic tether performance. *Journal of Propulsion and Power*. 10.2514/1.B35393, pp. 1 - 5. 20/01/2015.
Type of production: Scientific paper **Format:** Journal
- 36** Gonzalo Sanchez Arriaga; D. Pastor-Moreno. Direct Vlasov simulations of electron-attracting cylindrical Langmuir probes in flowing plasmas. *Physics of Plasmas*. 21 - null, pp. 073504-1 - 073504-8. 01/2014. ISSN 1070-664X
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,376
- 37** M. Sanjurjo-Rivo; Gonzalo Sanchez Arriaga; Jesus Pelaez Alvarez. Efficient Computation of Current Collection in Bare Electrodynamic Tethers in and beyond OML regime. *Journal of Aerospace Engineering*. pp. 04014144-1 - 04014144-9. 01/2014. ISSN 0893-1321
Type of production: Scientific paper
Position of signature: 2
Impact index in year of publication: 0,778
- 38** L. Salord; Gonzalo Sanchez Arriaga. Flight dynamics and stability of kites in steady and unsteady wind conditions. *Journal of Aircraft*. pp. 1 - 7. 01/2014. ISSN 0021-8669
Type of production: Scientific paper
Position of signature: 2
Impact index in year of publication: 0,632



- 39** A. Lifschitz; F. Sylla; S. Kahaly; A. Flacco; M. Veltcheva; Gonzalo Sanchez Arriaga; E. Lefebvre; V. Malka. Ion acceleration in underdense plasmas by ultra-short laser pulses. *New Journal of Physics*. pp. 1 - 10. 01/2014. ISSN 1367-2630
Type of production: Scientific paper
Position of signature: 6
Impact index in year of publication: 4,063
- 40** E. Siminos; Gonzalo Sanchez Arriaga; V. Saxena; I. Kourakis. Modelling relativistic solitary wave interactions in over-dense plasmas: a perturbed nonlinear Schrödinger equation framework. *Physical Review e*. 90 - null, pp. 063104-1 - 063104-15. 01/2014. ISSN 1539-3755
Type of production: Scientific paper
Position of signature: 2
Impact index in year of publication: 2,313
- 41** Gonzalo Sanchez Arriaga; Fco. Javier Sanz Recio; A. Debayle; G. Lehmann. The behavior of the electron plasma boundary in ultraintense laser-highly overdense plasma interaction. *Physics of Plasmas*. pp. 123107-1 - 123107-10. 01/2014. ISSN 1070-664X
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,376
- 42** Gonzalo Sanchez Arriaga. A direct Vlasov code to study the non-stationary current collection by a cylindrical Langmuir probe. *Physics of Plasmas*. pp. 013504-1 - 013504-8. 01/2013. ISSN 1070-664X
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,147
- 43** Vikrant Saxena; Ioannis Kourakis; Gonzalo Sanchez Arriaga; Evangelos Siminos. Interaction of spatially overlapping standing electromagnetic solitons in plasmas. *Physics Letters a*. pp. 473 - 477. 01/2013. ISSN 0375-9601
Type of production: Scientific paper
Position of signature: 3
Impact index in year of publication: 1,632
- 44** Gonzalo Sanchez Arriaga. Structure of intermediate shocks in collisionless anisotropic Hall-magnetohydrodynamics plasma models. *Physics of Plasmas*. pp. 102102 - 102102. 01/2013. ISSN 1070-664X
Type of production: Scientific paper
Position of signature: 1
- 45** Francois Sylla; A. Flacco; S. Kahaly; M. Veltcheva; A. Lifschitz; Gonzalo Sanchez Arriaga; E. Lefebvre; V. Malka. Anticorrelation between Ion Acceleration and Nonlinear Coherent Structures from Laser-Underdense Plasma Interaction. *Physical Review Letters*. 108 - null, pp. 115003 - 5. 01/2012. ISSN 0031-9007
Type of production: Scientific paper
Position of signature: 6
Impact index in year of publication: 7,621

- 46** Gonzalo Sanchez Arriaga; Juan Ramon Sanmartin Losada. Relativistic current collection by a cylindrical Langmuir probe. *Physics of Plasmas*. pp. 063506 - 8. 01/2012. ISSN 1070-664X
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,32
- 47** Gonzalo Sanchez Arriaga; Evangelos Siminos; Erik Lefebvre. Relativistic solitary waves modulating long laser pulses in plasmas. *Plasma Physics And Controlled Fusion*. 53 - null, pp. 45011 - 45029. 01/2011. ISSN 0741-3335
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,466
- 48** Gonzalo Sanchez Arriaga; Evangelos Siminos; Erik Lefebvre. Relativistic solitary waves with phase modulation embedded in long laser pulses in plasmas. *Physics of Plasmas*. 18 - null, pp. 082304 - 10. 01/2011. ISSN 1070-664X
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,32
- 49** Dimitri Laveder; Thierry Passot; Pierre-Louis Sulem; Gonzalo Sanchez Arriaga. Rogue Waves in Alfvénic turbulence. *Physics Letters a*. pp. 997 - 1002. 01/2011. ISSN 0375-9601
Type of production: Scientific paper
Position of signature: 4
Impact index in year of publication: 1,963
- 50** Gonzalo Sanchez Arriaga; Erik Lefebvre. Two-dimensional s.polarized solitary waves in relativistic plasmas I. The fluid plasma model. *Physical Review e*. 84 - null, pp. 036403 - 8. 01/2011. ISSN 1539-3755
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,352
- 51** Gonzalo Sanchez Arriaga; Erik Lefebvre. Two-dimensional s.polarized solitary waves in relativistic plasmas II. Stability, collisions, electromagnetic bursts and post-soliton evolution. *Physical Review e*. 84 - null, pp. 036404 - 8. 01/2011. ISSN 1539-3755
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,352
- 52** Gonzalo Sanchez Arriaga. ALFVEN SOLITON AND MULTISOLITON DYNAMICS PERTURBED BY NONLINEAR LANDAU DAMPING. *Physics of Plasmas*. 17 - null, pp. 082313 - 10. 01/2010. ISSN 1070-664X
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,32
- 53** Gonzalo Sanchez Arriaga; Juan Ramon Sanmartin Losada. FAST MAGNETOSONIC WAVE EXCITATION BY AN ARRAY OF WIRES WITH TIME-MODULATED CURRENTS. *Annales Geophysicae*. 28 - null, pp. 577 - 586. 01/2010. ISSN 0992-7689
Type of production: Scientific paper
Position of signature: 1



Impact index in year of publication: 1,62

- 54** Gonzalo Sanchez Arriaga; Juan Ramon Sanmartin Losada. MAGNETIC PUMPING OF WHISTLER WAVES BY TETHER CURRENT MODULATION. Journal of Geophysical Research. 115 - null, pp. A0231 - 9. 01/2010. ISSN 0148-0227
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 3,303
- 55** Gonzalo Sanchez Arriaga; Dimitri Laveder; Thierry Passot; Pierre-Louis Sulem. QUASICOLLAPSE OF OBLIQUE SOLITONS OF THE WEAKLY DISSIPATIVE DERIVATIVE NONLINEAR SCHRODINGER EQUATION. Physical Review e. 82 - null, pp. 016406 - 14. 01/2010. ISSN 1539-3755
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,352
- 56** Gonzalo Sanchez Arriaga; Tohru Hada; Yasuhiro Nariyuki. THE TRUNCATION MODEL OF THE DERIVATIVE NONLINEAR SCHRODINGER EQUATION. Physics of Plasmas. 16 - null, pp. 042302 - 8. 01/2009. ISSN 1070-664X
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,475
- 57** Gonzalo Sanchez Arriaga; Tohru Hada; Yasuhiro Nariyuki. TRUNCATION MODEL IN THE TRIPLE-DEGENERATE DERIVATIVE NONLINEAR SCHRODINGER EQUATION. Physics of Plasmas. 16 - null, pp. 042303 - 9. 01/2009. ISSN 1070-664X
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,475
- 58** Gonzalo Sanchez Arriaga; Juan Ramon Sanmartin Losada; Sergio Elaskar. DAMPING MODELS IN THE DERIVATIVE NONLINEAR SCHRODINGER EQUATION. Physics of Plasmas. 14 - null, pp. 082108 - 9. 01/2007. ISSN 1070-664X
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 2,325
- 59** Gonzalo Sanchez Arriaga. Dynamics and control of single-line kites. The Aeronautical Journal. 110 - null, pp. 615 - 621. 01/2006. ISSN 0001-9240
Type of production: Scientific paper
Position of signature: 1
Impact index in year of publication: 0,267
- 60** Juan Ramon Sanmartin Losada; Gonzalo Sanchez Arriaga. Seguridad Espacial: Una solución práctica para el problema de los residuos espaciales en órbita. III Seminario sobre actividades espaciales y derecho. 69-82, 2013. ISBN 978-84-616-7392-6
Type of production: Book chapter
Position of signature: 2



- 61** J. Sanz Recio; G. Sánchez-Arriaga. Mecanica analitica: lagrangiana, hamiltoniana y sistemas dinámicos. Mecanica analitica: lagrangiana, hamiltoniana y sistemas dinámicos. pp. 1 - 320. McGraw-Hill, 01/11/2018. ISBN 9788448615390
Type of production: Scientific book or monograph **Format:** Book
Position of signature: 2 **Degree of contribution:** Author or co-author of entire book
Total no. authors: 2
- 62** Gonzalo Sanchez Arriaga. BETsMA Manual. 2014. Available on-line at: <<http://www.thebetsproject.com/resources>>.
Type of production: Software Manual **Format:** Scientific and technical document or report

Works submitted to national or international conferences

- 1** **Title of the work:** Status of Development of a Deorbit Device Based on Electrodynamic Tether Technology in the E.T.PACK Project
Name of the conference: 8th European Conference on Space Debris
Corresponding author: Yes
City of event: Virtual,
Date of event: 20/04/2021
End date: 23/04/2021
Organising entity: European Space Agency
G. Sanchez-Arriaga; L. Tarabini; E.C. Lorenzini; K. Watzig; M. Tajmar; A. Post.
- 2** **Title of the work:** Low Work-Function Tether Deorbit Kit
Name of the conference: First International Orbital Debris Conference
City of event: Houston, United States of America
Date of event: 09/12/2020
End date: 12/12/2020
L. Tarabini; A. Ortega; A. Gimenez; E. Urgoiti; G. Sánchez-Arriaga; G. Borderes; E. C. Lorenzini; M. Tajmar; A. Post; J. F. Plaza.
- 3** **Title of the work:** An efficient Vlasov-Poisson solver and deep parametric analysis of cylindrical emissive probes
Name of the conference: 62nd Annual Meeting of the APS Division of Plasma Physics
Corresponding author: Yes
City of event: Virtual, United States of America
Date of event: 09/11/2020
End date: 13/11/2020
S. Shahsavani; X. Chen; G. Sánchez-Arriaga.
- 4** **Title of the work:** Plasma Sheath Around Long Conductors with Elliptic Cross-sections
Name of the conference: 62nd Annual Meeting of the APS Division of Plasma Physics
Corresponding author: Yes
City of event: Virtual, United States of America
Date of event: 09/11/2020
End date: 13/11/2020
L. Chiabo; G. Sánchez-Arriaga.



- 5** **Title of the work:** Development Roadmap of a Deorbit Kit Based on Electrodynamic Tether
Name of the conference: 71th International Astronautical Conference
City of event: Cyberspace,
Date of event: 12/10/2020
End date: 14/10/2020
L. Tarabini; A. Ortega; S. Garcia; G. Sánchez-Arriaga; E. Lorenzini; E. C. Lorenzini; L. Olivieri; G. Sarego; M. Tajmar.
- 6** **Title of the work:** UC3M Capabilities on AWE Systems
Name of the conference: IEA Wind. TEM#102 on Airborne Wind Energy
Corresponding author: Yes
City of event: Virtual,
Date of event: 23/09/2020
End date: 24/09/2020
G. Sanchez-Arriaga.
- 7** **Title of the work:** BETsMA v2.0: A friendly software for the analysis of electrodynamic tether missions in Jupiter
Name of the conference: 14th Europlanet Science Congress
Corresponding author: Yes
City of event: Virtual,
Date of event: 21/09/2020
End date: 09/10/2020
G. Borderes-Motta; G. Sánchez-Arriaga.
- 8** **Title of the work:** Deployment requirements for deorbiting electrodynamic tether technology
Name of the conference: Aerospace Europe Conference AEC2020
City of event: Burdeos, France
Date of event: 25/02/2020
End date: 28/02/2020
G. Sarego; L. Olivieri; A. Valmorbidia; A. Brunello; E. C. Lorenzini; L. Tarabini; E. Urgoiti; A. Ortega; G. Borderes; G. Sánchez-Arriaga.
- 9** **Title of the work:** Flight Testing, Aerodynamic Parameter Identification and Dynamic Simulation of Rigid and Flexible Kites Applied to Airborne Wind Energy systems
Name of the conference: Airborne Wind Energy Conference
Corresponding author: Yes
City of event: Glasgow, United Kingdom
Date of event: 15/10/2019
End date: 16/10/2019
Ricardo Borobia-Moreno; Daniel Ramiro Rebollo; Gonzalo Sanchez-Arriaga; Roland Schmehl.
- 10** **Title of the work:** Numerical Analysis of Tape Like Low Work Function Tether Interaction With Ionospheric Plasmas
Name of the conference: The Sixth International Conference on Tethers in Space
Type of event: Conference
Corresponding author: Yes
City of event: Madrid, Spain
Date of event: 12/06/2019
End date: 14/06/2019
Organising entity: Universidad Carlos III de Madrid **Type of entity:** University



L. Chiabó; X. Chen; G. Sanchez-Arriaga.

- 11 Title of the work:** The E.T.PACK Project: towards a fully passive and consumable-less deorbit kit based on low work-function tether technology
Name of the conference: The Sixth International Conference on Tethers in Space
Type of event: Conference
Corresponding author: Yes
City of event: Madrid, Spain
Date of event: 12/06/2019
End date: 14/06/2019
Organising entity: Universidad Carlos III de Madrid **Type of entity:** University
G. Sanchez-Arriaga; S. Naghdi; K. Waetzig; J. Schilm; E. Lorenzini; M. Tajmar; E. Urgoiti; L. Tarabini; J. F. Plaza; A. Post.
- 12 Title of the work:** Trade-off Analysis of C12A7:e- Deposition Techniques Applied to Low Work Function Tethers
Name of the conference: The Sixth International Conference on Tethers in Space
Type of event: Conference
Corresponding author: Yes
City of event: Madrid, Spain
Date of event: 12/06/2019
End date: 14/06/2019
Organising entity: Universidad Carlos III de Madrid **Type of entity:** University
J. F. Plaza; G. Meiro; A. Post; R. Perez; F. J. Palomares; P. Tejedor; S. Naghdi; A. Várez; X. Chen; J. Navarro; G. Sanchez-Arriaga.
- 13 Title of the work:** Work function tuning of graphene oxide by using cesium applied to low work function tethers
Name of the conference: The Sixth International Conference on Tethers in Space
Type of event: Conference
Corresponding author: Yes
City of event: Madrid, Spain
Date of event: 12/06/2019
End date: 14/06/2019
Organising entity: Universidad Carlos III de Madrid **Type of entity:** University
S. Naghdi; A. Várez; X. Chen; J. Navarro; G. Sanchez-Arriaga; J. F. Plaza; G. Meiro; A. Post.
- 14 Title of the work:** A Small-Scale Experimental Setup aimed at the aerodynamic parameter identification of flexible and rigid kites applied to airborne wind energy systems
Name of the conference: 7th European Conference on Renewable Energy Systems
Corresponding author: Yes
City of event: Madrid, Spain
Date of event: 10/06/2019
End date: 12/06/2019
Organising entity: Universidad Carlos III de Madrid **Type of entity:** University
R. Borobia-Moreno; G. Sánchez-Arriaga.
- 15 Title of the work:** Lagrangian and classical multi-drone dynamic simulators with application to airborne wind energy systems
Name of the conference: 7th European Conference on Renewable Energy Systems
Corresponding author: Yes
City of event: Madrid, Spain



Date of event: 10/06/2019

End date: 12/06/2019

Organising entity: Universidad Carlos III de Madrid **Type of entity:** University
J. A. Serrano-Iglesias; G. Sánchez-Arriaga.

16 Title of the work: Structure and Evolution of Magnetohydrodynamic Solitary Waves with Hall and Finite Larmor Radius Effects

Name of the conference: Waves Côte d'Azur

City of event: Nice, France

Date of event: 04/06/2019

End date: 07/06/2019

E. Bello-Benítez; G. Sánchez-Arriaga; T. Passot; D. Laveder; E. Siminos.

17 Title of the work: Misiones y tecnologías de eliminación activa de desechos espaciales

Name of the conference: Congreso Nacional de i+d en Defensa y Seguridad

City of event: Valladolid, Spain

Date of event: 20/11/2018

End date: 22/11/2018

Organising entity: Ministerio de Defensa **Type of entity:** Ministerio
M. Sanjurjo; G. Sanchez-Arriaga; P. Fajardo; R. Pulido.

18 Title of the work: Magnetic Nozzles

Name of the conference: EPIC Workshop

City of event: London,

Date of event: 15/10/2018

End date: 18/10/2018

Organising entity: Electric Propulsion Cluster
M. Merino; E. Ahedo; J. Navarro; P. Fajardo; G. Sanchez-Arriaga.

19 Title of the work: Antireflection performance of graphene directly deposited on silicon substrate by the APCVD method

Name of the conference: Graphene Week

City of event: San Sebastian, Spain

Date of event: 10/09/2018

End date: 14/09/2018

Organising entity: Graphene Flagship
S. Naghdi; G. Sánchez-Arriaga; K. Rhee.

20 Title of the work: A constraint-free ight simulator package for airborne wind energy systems

Name of the conference: Torque2018

Corresponding author: Yes

City of event: Milan, Italy

Date of event: 20/06/2018

End date: 22/06/2018

Organising entity: Universidad Politécnica de Milan
Gonzalo Sanchez Arriaga; Alejandro Pastor Rodríguez; Ricardo Borobia Moreno; Roland Schmehl.

21 Title of the work: Collisional Effects in Non-stationary Plasma Expansions along Convergent-Divergent Magnetic Nozzles

Name of the conference: Space Propulsion Conference

City of event: Sevilla, Spain



Date of event: 14/05/2018

End date: 18/05/2018

Organising entity: Association Aéronautique et Astronautique de France

J. Zhou; G. Sanchez-Arriaga; E. Ahedo; M. Martinez-Sanchez; J. Ramos.

22 Title of the work: Customer-driven deorbit kit based on bare electrodynamic tether technology

Name of the conference: Clean Space Industrial Days

City of event: Noordwijk, Holland

Date of event: 24/10/2017

End date: 26/10/2017

Organising entity: European Space Agency

Eduardo Urgoiti; Lorenzo Tarabini; Gonzalo Sanchez-Arriaga; Enrico Lorenzini; Martin Tajmar; Jesus Marcos.

23 Title of the work: One-dimensional Direct Vlasov Simulations of Non-stationary Plasma Expansion in Magnetic Nozzle

Name of the conference: International Electric Propulsion Conference

Corresponding author: Yes

City of event: Atlanta, United States of America

Date of event: 08/10/2017

End date: 12/10/2017

Organising entity: Georgia Institute of Technology and NASA

Gonzalo Sanchez-Arriaga; Jiewei Zhou; Eduardo Ahedo; Manuel Martínez-Sánchez; Jesus Ramos.

24 Title of the work: Application of the Estimation Before Modelling (EBM) technique to the Aerodynamic Characterization of Power Kites

Name of the conference: Airborne Wind Energy Conference

Corresponding author: No

City of event: Freiburg, Germany

Date of event: 05/10/2017

End date: 06/10/2017

Organising entity: Freiburg University and AWESCO Network

Ricardo Borobia-Moreno; Gonzalo Sanchez-Arriaga; Roland Schmehl.

25 Title of the work: Determination of Optimal Control Laws in Airborne Wind Energy Scenarios With a Self-Consistent Kite Dynamics Model

Name of the conference: Airborne Wind Energy Conference

Corresponding author: No

City of event: Freiburg, Germany

Date of event: 05/10/2017

End date: 06/10/2017

Organising entity: Freiburg University and AWESCO Network

Daniel Expósito; Manuel Soler; Gonzalo Sanchez-Arriaga.

26 Title of the work: Experimental setup to study airborne wind energy generation using a train of kites

Name of the conference: Airborne Wind Energy Conference

Corresponding author: No

City of event: Freiburg, Germany

Date of event: 05/10/2017

End date: 06/10/2017

Organising entity: Freiburg University and AWESCO Network



Hiroki Endo; Kazuo Arakawa; Gonzalo Sanchez-Arriaga; Hironori Fujii; Hiroshi Okubo; Yasutake Takahashi.

- 27** **Title of the work:** Kite Flight Simulators Based on Minimal Coordinate Formulations
Name of the conference: Airborne Wind Energy Conference
Corresponding author: Yes
City of event: Freiburg, Germany
Date of event: 05/10/2017
End date: 06/10/2017
Organising entity: Freiburg University and AWESCO Network
Gonzalo Sanchez-Arriaga; Alejandro Pastor-Rodríguez; Manuel García-Villalba; Manuel Sanjurjo-Rivo; Ricardo Borobia-Moreno; Roland Schmehl.
- 28** **Title of the work:** Current-Voltage and Floating Potential Characteristics of Cylindrical Emissive Probes from a Self-consistent Full-Kinetic Model
Name of the conference: 12th International Workshop on Electric Probes in Magnetized Plasmas
City of event: Naklo, Slovenia
Date of event: 04/09/2017
End date: 07/09/2017
Organising entity: Nuclear Society of Slovenia
Xin Chen; Gonzalo Sanchez-Arriaga.
- 29** **Title of the work:** Deorbit Kit Based on Low Work-Function Tethers for Cubesats
Name of the conference: CubeSat Industry Day 2017
Type of participation: Participatory - oral communication
City of event: Noordwijk, Holland
Date of event: 13/06/2017
End date: 15/06/2017
Organising entity: European Space Agency
G. Sánchez-Arriaga; K. Watzig; E. Lorenzini; M. Tajmar; E. Urgoiti; Lorenzo Tarabini.
- 30** **Title of the work:** Deorbiting kits for cubesats
Name of the conference: CubeSat Industry Day 2017
Type of participation: Participatory - oral communication
City of event: Noordwijk, Holland
Date of event: 13/06/2017
End date: 15/06/2017
Organising entity: European Space Agency
X. Geneste; E. Urgoiti; Lorenzo Tarabini; G. Sánchez-Arriaga; E. Lorenzini; M. Tajmar; J. Marcos.
- 31** **Title of the work:** A low-cost experimental platform for airborne wind energy generation using kites
Name of the conference: World Wind Energy Conference
Type of event: Conference
Type of participation: 'Participatory - poster
City of event: Malmoe, Sweden
Date of event: 12/06/2017
End date: 14/06/2017
Organising entity: World Wind Energy Association
Hiroki Hendo; G. Sanchez-Arriaga.



- 32** **Title of the work:** Flight Testing Setup for the Aerodynamic Characterisation of Power Kites Applied to Airborne Wind Energy Generation
Name of the conference: World Wind Energy Conference
Type of event: Conference
Type of participation: 'Participatory - poster
City of event: Malmoe, Sweden
Date of event: 12/06/2017
End date: 14/06/2017
Organising entity: World Wind Energy Association
Ricardo Borobia Moreno; Alessandro Serino; Hiroki Hendo; G. Sanchez-Arriaga.
- 33** **Title of the work:** The Conquest of Space: un curso MOOC y SPOC en ingeniería aeroespacial
Name of the conference: EMOOCS 2017 CONFERENCE
City of event: Leganes-Madrid, Spain
Date of event: 22/05/2017
End date: 26/05/2017
Organising entity: Universidad Carlos III de Madrid **Type of entity:** University
Manuel Sanjurjo-Rivo; Mario Merino; Filippo Cichocki; Xin Chen; David Morante; Daniel Pérez-Grande; Gonzalo Sánchez-Arriaga; Manuel Soler; Eduardo Ahedo.
- 34** **Title of the work:** MODELING AND PERSPECTIVES OF LOW-WORK-FUNCTION ELECTRODYNAMIC TETHERS TO DEORBIT SPACE DEBRIS
Name of the conference: 7th European Conference on Space Debris
Type of event: Conference
Type of participation: Participatory - oral communication
Corresponding author: Yes
City of event: Darmstadt, Germany
Date of event: 18/04/2017
End date: 21/04/2017
Organising entity: European Space Agency
Gonzalo Sanchez Arriaga; Xin Chen.
- 35** **Title of the work:** Orbital Motion Theory for Cylindrical Langmuir Probes
Name of the conference: 2nd European Conference on Plasma Diagnostics
City of event: Burdeos, France
Date of event: 18/04/2017
End date: 21/04/2017
Organising entity: Universidad de Burdeos
Xin Chen; Gonzalo Sanchez Arriaga.
- 36** **Title of the work:** SIMULACIÓN NUMÉRICA DE LA RECOLECCIÓN DE CORRIENTE EN UNA SONDA DE LANGMUIR CILÍNDRICA
Name of the conference: Mecánica Computacional
City of event: Cordoba, Argentina
Date of event: 08/11/2016
End date: 11/11/2016
Organising entity: Asociacion Argentina de Mecánica Computacional
Denis Lorenzon; Sergio Elaskar; Gonzalo Sanchez-Arriaga.



- 37** **Title of the work:** Localization of extreme light: relativistic solitons, quasi - solitons and breathers
Name of the conference: III International Symposium Advances in Nonlinear Photonics
City of event: Minsk, Byelorussia
Date of event: 29/09/2016
End date: 01/10/2016
Organising entity: Belarusian State University
E Siminos; Gonzalo Sanchez-Arriaga.
- 38** **Title of the work:** Propellantless Technology for the Deorbiting of Small Satellites Mega-Constellation at the End of Life
Name of the conference: 4S Symposium
City of event: Valletta, Malta
Date of event: 30/05/2016
End date: 03/06/2016
Organising entity: European Space Agency
Riccardo Mantellato; Enrico Lorenzini; Gonzalo Sanchez-Arriaga.
- 39** **Title of the work:** BETsMA: A Friendly Tool for Electrodynamics Tether Mission Design
Name of the conference: International Conference on Tethers in Space
Type of event: Conference
Type of participation: Participatory - poster
City of event: Ann Arbor, United States of America
Date of event: 24/05/2016
End date: 26/05/2016
Organising entity: University of Michigan
Type of entity: University
Gonzalo Sanchez-Arriaga; X Chen.
- 40** **Title of the work:** Comparison of Technologies for de-orbiting spacecraft from Low-Earth-Orbit
Name of the conference: International Conference on Tethers in Space
Type of event: Conference
Type of participation: Participatory - oral communication
City of event: Ann Arbor, United States of America
Date of event: 24/05/2016
End date: 26/05/2016
Organising entity: University of Michigan
Type of entity: University
Gonzalo Sanchez-Arriaga; Juan Sanmartín; Enrico Lorenzini.
- 41** **Title of the work:** Deorbit with bare tether system from high eccentricity initial orbit: analyses and numerical simulation
Name of the conference: International Conference on Tethers in Space
City of event: Ann Arbor, United States of America
Date of event: 24/05/2016
End date: 26/05/2016
Organising entity: University of Michigan
Type of entity: University
Guido Pastore; Enrico Lorenzini; Gonzalo Sanchez-Arriaga.
- 42** **Title of the work:** Analysis of thermionic bare tether operation regimes in passive mode
Name of the conference: 14th Spacecraft Charging Technology Conference
City of event: Noordwijk, Holland
Date of event: 04/04/2016
End date: 08/04/2016



Organising entity: European Space Astronomy Centre
J. Sanmartin; X. Chen; G. Sanchez-Arriaga.

43 Title of the work: Electrodynamics fundamentals

Name of the conference: SCIENCE AND TECHNOLOGY CHALLENGES OF SPACE DEBRIS REMOVAL AND ASTEROID DEFLECTION

Type of event: Conference

Reasons for participation: Upon invitation

City of event: Santander, Spain

Date of event: 06/07/2015

End date: 10/07/2015

Organising entity: Universidad Internacional
Menéndez Pelayo

Type of entity: University

G. Sánchez-Arriaga.

44 Title of the work: End of life disposal of spacecraft with electrodynamic tethers

Name of the conference: SCIENCE AND TECHNOLOGY CHALLENGES OF SPACE DEBRIS REMOVAL AND ASTEROID DEFLECTION

Type of event: Conference

Reasons for participation: Upon invitation

City of event: Santander, Spain

Date of event: 06/07/2015

End date: 10/07/2015

Organising entity: Universidad Internacional
Menéndez Pelayo

Type of entity: University

G. Sánchez-Arriaga.

45 Title of the work: Lecture on Propellantless Propulsion: Bare Electrodynamic tethers

Name of the conference: Lecture on Propellantless Propulsion

Type of event: Workshop

Type of participation: Participatory - oral
communication

Reasons for participation: Upon invitation

City of event: Holland

Date of event: 26/06/2015

End date: 26/06/2015

Organising entity: European Space Agency
G. Sánchez-Arriaga; M. Sanjurjo-Rivo.

46 Title of the work: Linearly polarized breather-like solitary waves in cold plasmas

Name of the conference: Novel light sources in laser plasma interactions

City of event: Dresden, Germany

Date of event: 20/04/2015

End date: 24/04/2015

Organising entity: Max Planck Institute
G. Sánchez-Arriaga; E. Siminos; V. Saxena; I. Kourakis.

47 Title of the work: Life Deorbiting Services for Microsatellites Making Use of Bare Electrodynamic Tethers

Name of the conference: Small Satellite Systems and Services Symposium,

Type of participation: Participatory - poster

Date of event: 26/05/2014

Organising entity: European Space Agency



City organizing entity: Palma de Mallorca,
R. Mantellato; A. Valmorbida; M. Pertile; A. Francesconi; E. Lorenzini; Gonzalo Sanchez Arriaga.

- 48** **Title of the work:** Seguridad Espacial: una solución práctica para el problema de los residuos espaciales en órbita
Name of the conference: III Seminario sobre Actividades Espaciales y Derecho
Type of participation: Participatory - invited/keynote talk
City of event: Madrid, Spain
Date of event: 19/11/2013
End date: 21/11/2013
Organising entity: Instituto Iberoamericano de Derecho Aeronáutico y del Espacio de la Aviación Comercial
J. Sanmartín Losada; G. Sanchez Arriaga.
- 49** **Title of the work:** Direct Vlasov simulations of non-stationary cylindrical Langmuir probe in flowing plasmas
Name of the conference: 10th International Workshop on Electric Probes in Magnetized Plasmas (IWEP 2013)
Type of participation: Participatory - oral communication
Date of event: 09/07/2013
Organising entity: Universidad Politécnica de Madrid
Type of entity: University
City organizing entity: Madrid, España,
D. Pastor Moreno; Gonzalo Sanchez Arriaga. "Book of Abstracts of the 10-th International Workshop on Electric Probes in Magnetized Plasmas IWEP 2013, Editorial Universidad Politécnica de Madrid". pp. 38 - 38.
- 50** **Title of the work:** Structural stability analysis of the ultra-intense laser/plasma interaction: explaining multiple results for the same simulations and experiments
Name of the conference: 40th EPS Conference on Plasma Physics
Type of participation: Participatory - poster
City of event: Helsinki,
Date of event: 01/07/2013
Organising entity: European Physical Society
City organizing entity: Helsinki,
Gonzalo Sanchez Arriaga; A. Debayle; Fco. Javier Sanz Recio.
- 51** **Title of the work:** Tape-tether design for the de-orbiting from given altitude and inclination
Name of the conference: 6th European Conference on Space Debris
Type of event: Conference
Type of participation: Participatory - poster
Date of event: 22/04/2013
Organising entity: European Space Agency
City organizing entity: Darmstadt,
Juan Ramon Sanmartin Losada; Antonio Sánchez Torres; Shaker Bayajid Khan .; Gonzalo Sanchez Arriaga; Mario Charro Cubero. "Proceedings of 6th European Conference on Space Debris". pp. 1 - 5.
- 52** **Title of the work:** Eliminación de basura espacial
Name of the conference: European Space Expo
Type of event: ESE
Type of participation: Participatory - invited/keynote talk
City of event: Madrid, Spain
Date of event: 12/02/2013
End date: 18/02/2013



Organising entity: Comisión Europea
Gonzalo Sanchez Arriaga.

Type of entity: 0

- 53** **Title of the work:** Propellantless deorbiting of space debris by bare electrodynamic tethers
Name of the conference: 2nd FP7 Space Conference
Type of participation: Participatory - invited/keynote talk
Date of event: 15/11/2012
Organising entity: Comisión Europea
City organizing entity: Larnaca, Chipre,
Juan Ramon Sanmartin Losada; Gonzalo Sanchez Arriaga; E. Lorenzini; D. Zanutto; J. F. Roussel; P. Sarrailh; J. D. Williams; K. Xie; F. Garcia de Quiros; J. Carrasco; T. van Zoest; R. Rosta; J. Lasa; J. Marcos.
- 54** **Title of the work:** A corrected tether-mission to Jupiter
Name of the conference: European Planetary Science Congress 2012
Type of participation: 'Participatory - poster
Date of event: 23/09/2012
Organising entity: European Research Infrastructure for Planetary Science
Gonzalo Sanchez Arriaga; Mario Charro Cubero; Juan Ramon Sanmartin Losada.
- 55** **Title of the work:** BETs progress in state-of-the-art tether technology
Name of the conference: CleanSpace Workshop (ESA/ESOC)
Type of participation: Participatory - oral communication
Date of event: 17/09/2012
Organising entity: European Space Agency
City organizing entity: Darmstadt,
Juan Ramon Sanmartin Losada; Gonzalo Sanchez Arriaga; E. Lorenzini; et. al.
- 56** **Title of the work:** Dynamics of Alfvén solitons perturbed by nonlinear Landau damping
Name of the conference: 2th Conference on Localized Excitations in Nonlinear Complex Systems
Type of participation: 'Participatory - poster
Date of event: 09/07/2012
Organising entity: Universidad de Sevilla
City organizing entity: Sevilla,
Gonzalo Sanchez Arriaga.
- 57** **Title of the work:** Dynamic of two-dimensional s-polarized relativistic solitary waves in plasmas
Name of the conference: Exchange on Laser-Plasma Interaction Theory
Type of participation: Participatory - oral communication
Date of event: 16/04/2012
Organising entity: Max-Planck Institute
City organizing entity: Dresden,
Gonzalo Sanchez Arriaga; E. Lefebvre.
- 58** **Title of the work:** Dynamic of subcycle linearly polarized relativistic solitary waves in plasmas
Name of the conference: Congres General de la Societe Francaise de Physique
Type of participation: Participatory - oral communication
Date of event: 04/07/2011
Organising entity: Societe Francaise de Physique
City organizing entity: Burdeos,
Gonzalo Sanchez Arriaga; E. Lefebvre.



- 59** **Title of the work:** Dynamic of subcycle linearly polarized relativistic solitary waves in plasmas
Name of the conference: 38th EPS Plasmas Strasbourg 2011
Type of participation: 'Participatory - poster
Date of event: 27/06/2011
Organising entity: European Physical Society
City organizing entity: Estrasburgo,
Gonzalo Sanchez Arriaga; E. Lefebvre.
- 60** **Title of the work:** Observation of spectral modulation in laser ion acceleration from underdense plasmas
Name of the conference: 52nd Annual meeting of the APS Division of Plasma Physics
Type of participation: Participatory - oral communication
Date of event: 08/11/2010
Organising entity: American Physical Society
A. Flacco; F. Sylla; S. Kahaly; M. Veltcheva; Gonzalo Sanchez Arriaga; E. Lefebvre; V. Malka.
- 61** **Title of the work:** In-orbit experiment on parametric pumping low frequency waves by tether-current modulation
Name of the conference: 37th Committee on Space Research (COSPAR) Scientific Assembly
Type of participation: Participatory - oral communication
Date of event: 13/07/2008
Organising entity: Committee on Space Research
Gonzalo Sanchez Arriaga; Juan Ramon Sanmartin Losada.
- 62** **Title of the work:** Chaos in nonlinear Alfvén waves using the DNLS equation
Name of the conference: International Symposium on Electrodynamics
Date of event: 04/11/2006
End date: 06/11/2006
S Elaskar; G. Sanchez Arriaga; J. Sanmartín Losada.
- 63** **Title of the work:** Kite Flight Simulator
Name of the conference: AIAA Pegasus Student Conference
Type of participation: Participatory - oral communication
City of event: Toulouse,
Date of event: 2005
Organising entity: AIAA
Gonzalo Sanchez Arriaga.

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

Title of the work: Relativistic solitary waves in laser-plasma interaction
Name of the event: Seminar of the Departement de Physique Theorique et Appliquée
Type of event: Course
City of event: Paris, France
Date of event: 29/07/2011
Organising entity: CEA
Gonzalo Sanchez Arriaga.

Type of entity: Public Research Body



Other dissemination activities

- 1** **Title of the work:** BETsMA: soluciones para 6000 toneladas de basura espacial
Name of the event: Newsletter
Type of event: Artículo
City of event: Madrid,
Date of event: 2014
Organising entity: CAIT (UPM)
G. Sanchez Arriaga.
- 2** **Title of the work:** El Problema de la Basura Espacial
Name of the event: Hablando con Científicos
Type of event: Media interviews
City of event: Madrid,
Date of event: 2014
Organising entity: Cienciaes.com
Gonzalo Sanchez Arriaga.
- 3** **Title of the work:** El problema de la Basura Espacial
Name of the event: Artículo para revista
Type of event: Media interviews
City of event: Madrid,
Date of event: 2014
Organising entity: Revista Muy Interesante
G. Sánchez Arriaga.

R&D management and participation in scientific committees

Scientific, technical and/or assessment committees

Committee title: Jury Member of the Symposium Design and Syntgesis Exercise
Affiliation entity: Delft University of Technology
City affiliation entity: Delft, Holland
Start-End date: 05/07/2012 - 05/07/2012

Organization of R&D activities

- 1** **Title of the activity:** Generación Limpia de Energía con Cometas de Tracción
Type of activity: Semana de la Ciencia de Madrid 2017
Geographical area: National
Convening entity: Universidad Carlos III de Madrid
Type of entity: University
City convening entity: Madrid
Type of participation: Organiser
N° assistants: 200
Start-End date: 07/10/2017 - 17/11/2016
Duration: 2 days



- 2** **Title of the activity:** Generación Limpia de Energía con Cometas de Tracción
Type of activity: Semana de la Ciencia de Madrid 2016
Geographical area: National
Convening entity: Universidad Carlos III de Madrid
Type of entity: University
City convening entity: Madrid
Type of participation: Organiser
N° assistants: 200
Start-End date: 15/11/2016 - 17/11/2016
Duration: 2 days
- 3** **Title of the activity:** Programme Committee
Type of activity: 14th Spacecraft Charging Technology Conference
Geographical area: European Union
Convening entity: European Space Agency
Type of entity: Innovation and Technology Centres
City convening entity: Noodwijk, Holland
Start-End date: 04/04/2016 - 08/04/2016
- 4** **Title of the activity:** BETs Final Meeting
Geographical area: European Union
Convening entity: Universidad Politécnica de Madrid
Type of entity: University
City convening entity: Madrid
Type of participation: Organiser
N° assistants: 20
Start-End date: 22/01/2014 - 23/01/2014
Duration: 2 days
- 5** **Title of the activity:** Fusión nuclear por laser: una energía limpia para el futuro
Type of activity: XIV Semana de la Ciencia de Madrid
Geographical area: National
Convening entity: Universidad Politécnica de Madrid
Type of entity: University
City convening entity: Madrid
Type of participation: Organiser
N° assistants: 200
Start date: 06/11/2014
Duration: 2 days
- 6** **Title of the activity:** El problema de la Basura Espacial y sus Soluciones
Type of activity: XIV Semana de la Ciencia de Madrid
Geographical area: National
Convening entity: Universidad Politécnica de Madrid
Type of entity: University
City convening entity: Madrid
Type of participation: Organiser
N° assistants: 200
Start date: 03/11/2014
Duration: 3 days
- 7** **Title of the activity:** Amarras Conductoras Espaciales para deorbitar satélites al finalizar la misión
Type of activity: XIII Semana de la Ciencia de Madrid
Geographical area: National
Convening entity: Universidad Politécnica de Madrid
Type of entity: University
City convening entity: Madrid
Type of participation: Organiser
N° assistants: 200
Start date: 04/11/2013
Duration: 3 days



- 8** **Title of the activity:** Amarras Conductoras Espaciales para deorbitas satélites al finalizar la misión
Type of activity: XII Semana de la Ciencia de Madrid **Geographical area:** National
Convening entity: Universidad Politécnica de Madrid **Type of entity:** University
City convening entity: Madrid
Type of participation: Organiser
N° assistants: 200
Start date: 05/11/2012 **Duration:** 3 days

R&D management

Name of the activity: Propellantless de orbiting of space debris by bare electrodynamic tethers (FP7/Space project)
Type of management: Management of R&D&I actions and projects
Performed tasks: Collaboration with the head of the project on the daily communication with the partners, some decision-making processes and the organization of projects meeting. Responsible of the development of two software, one of them involving the coordinated work of the seven partners of the project
Entity: Universidad Politecnica de Madrid
Start date: 28/05/2012 **Duration:** 2 years

Evaluation and revision of R&D projects and articles

Name of the activity: Referee
Performed tasks: Referee of the ISI Journals: Physics of Plasmas, Physica D, Journal of Guidance, Control, and Dynamics, Earth, Planets and Space, The Aeronautical Journal, IEEE Transactions on Plasma Science, Aerospace Science and Technology, Plasma Physics and Controlled Fusion, Physics Letters A, Journal of Propulsion and Power, Advances in Space Research, Annales Geophysicae

Other achievements

Stays in public or private R&D centres

- 1** **Entity:** University of Freiburg
Faculty, institute or centre: SysCop
City of entity: Freiburg, Germany
Start-End date: 09/08/2018 - 24/08/2018
Goals of the stay: Guest
Provable tasks: Research Activities on Airborne Wind Energy
- 2** **Entity:** TU Delft **Type of entity:** University
City of entity: Delft, Holland
Start-End date: 09/08/2017 - 24/08/2017 **Duration:** 15 days
Funding entity: Ministerio de Economía y Competitividad
Goals of the stay: Guest
Provable tasks: Development of airborne wind energy system simulators
- 3** **Entity:** Observatoire de la Côte d'Azur]
City of entity: Nice, France
Start-End date: 25/06/2008 - 05/10/2008 **Duration:** 102 days



Goals of the stay: Doctorate

Provable tasks: DNLS soliton behavior perturbed by non-linear Landau damping

4 Entity: Kyushu University

City of entity: Fukuoka, Japan

Start-End date: 27/03/2007 - 25/07/2007

Duration: 122 days

Goals of the stay: Doctorate

Provable tasks: Truncation model in the DNLS and the triple-degenerate DNLS equation

5 Entity: Max-Planck Institute

City of entity: Dresden, Germany

Start date: 14/01/2014

Duration: 4 days

Goals of the stay: Guest

Provable tasks: Solitary waves interaction in relativistic plasmas

6 Entity: Observatoire de la Côte d'Azur]

City of entity: Nice,

Start date: 14/01/2013

Duration: 3 days

Goals of the stay: Guest

Provable tasks: Shocks and soliton in hall-magnetohydrodynamic plasma models

Obtained grants and scholarships

1 Name of the grant: Beca Predoctoral FPI

Aims: Pre-doctoral

Awarding entity: Ministerio de Educación y Ciencia

Amount of the grant: 52,8 €

Conferral date: 01/08/2005

End date: 31/07/2009

Entity where activity was carried out: Universidad Politécnica de Madrid

2 Name of the grant: Contrato Ramón y Cajal

Aims: Post-doctoral

Awarding entity: Ministerio de Economía y Competitividad

Conferral date: 10/07/2015

Duration: 5 years

Entity where activity was carried out: Universidad Carlos III de Madrid

3 Name of the grant: Contrato Postdoctoral

Aims: Post-doctoral

Awarding entity: Commissariat a l'Energie Atomique

Amount of the grant: 67,2 €

Conferral date: 01/10/2009



Scientific societies and professional associations

Name of the society: Real Sociedad Española de Física

Start date: 2013

Prizes, mentions and distinctions

- 1** **Description:** Plaza de Profesor Titular de Universidad convocada con certificado I3 e incluida en el Programa de Excelencia del Profesorado Universitario
Conferral date: 15/10/2020
- 2** **Description:** The technological project BETsMA was recognized due to its innovative character by CAIT-UPM during the I Workshop International UPM Innovatech
Awarding entity: CAIT
City awarding entity: Madrid
Conferral date: 04/12/2013
- 3** **Description:** Premio Extraordinario de Doctorado de la UPM
Awarding entity: Universidad Politécnica de Madrid **Type of entity:** University
City awarding entity: UPM
Conferral date: 28/07/2010
- 4** **Description:** The end of the course project "Simulador de Vuelo de Cometas" was selected for the AIAA Student Pegasus Congerence
Awarding entity: Escuela Tecnica Superior de Ingenieroes Aeronáuticos
City awarding entity: Madrid, Spain
Conferral date: 2005

Obtained accreditations/recognitions

- 1** **Description:** Acreditato I3
Accrediting entity: Agencia Estatal de Investigación
Date of recognition: 21/10/2019
- 2** **Description:** Acreditado como Profesor Titular
Accrediting entity: Agencia Nacional de Evaluación **Type of entity:** Agency de la Calidad y Acreditación
Date of recognition: 28/05/2018
- 3** **Description:** Acreditado como Profesor Contratado Doctor
Accrediting entity: Agencia Nacional de Evaluación **Type of entity:** Agencia de la Calidad y Acreditación
Date of recognition: 12/03/2013
- 4** **Description:** Acreditado como Profesor Ayudante Doctor
Accrediting entity: Agencia Nacional de Evaluación **Type of entity:** Agencia de la Calidad y Acreditación

Date of recognition: 12/02/2011