



NEWS

INSTITUTE OF PHYSICS AND AEROSPACE SCIENCES OF THE UNIVERSITY OF VIGO

The Institute of Physics and Aerospace Sciences starts its activity

In March 2023, the Institute of Physics and Aerospace Sciences (IFCAE), in the Ourense campus, began its activity. The doctor in Physics and professor of the Department of Applied Physics of the University of Vigo Ángel Paredes Galán was elected director of the center, while the doctor in Aeronautical Engineering and professor at the School of Aeronautical and Space Engineering Elena Beatriz Martín Ortega was elected secretary. According to statements by the director of IFCAE: “The trend is to bring together research groups in larger structures, such as research centers or institutes, so the creation of this institute was an opportunity that we could not miss”. Furthermore, Paredes Galán highlighted that the members of the institute carry out their work with “a lot of enthusiasm and desire to work, but also with respect for the responsibility that it entails”.

Among other aspects, the IFCAE has the distinction of being the first institute to be launched at the University of Vigo, although its origins date back to 2011, when the approval of a regulation in the month of December for the creation of institutes promoted the preparation by 19 UVigo teachers of an IFCAE proposal, processed and approved throughout 2022 by the Senate and the Governing Council as well as by the Social Council.

The institute is made up of research staff from the Ourense and Vigo campuses, who carry out their work in the areas of physics and aerospace sciences, seeking synergies between both as well as with other related disciplines, such as mathematics and computer engineering, so that the IFCAE is structured into five major pillars: fluid dynamics and thermodynamics; optical systems; unmanned aircraft; space sciences and modeling, simulation and software. Regarding the career of its members, together they have more than 50 six-year terms, more than 40 doctoral theses, more than 1000 articles and two EBts, one of the objectives of the institute being to attract talent, transfer knowledge to society, promote excellent and renowned research, and carry out communication and dissemination tasks.



Ángel Paredes Galán, director of the Institute of Physics and Aerospace Sciences (IFCAE).



Venue of the Institute of Physics and Aerospace Sciences.

IFCAE participates in the ISC Award to Francisco Javier Martínez midterm meeting

The ICO is member of category one of the ISC since June 2022.



Humberto Michinel, Secretary General of ICO, with Sir Peter Gluckman, President of the International Science Council, during the last mid-term meeting in Paris.

Humberto Michinel, IFCAE researcher and head of internationalization of the Institute, has been the secretary general of the International Commission for Optics (ICO) since 2017. One of the greatest successes of his management in this prestigious international organization has been the admission of the ICO as a category one member of the International Science Council (ISC) in 2022. The ISC is recognized as the scientific organization par excellence worldwide, so this achievement is transcendental for the ICO and the entire community optics and photonics, which are priority research areas of IFCAE. By becoming a full category one member, ICO consolidates its position as a key player on the international scientific scene, ensuring that the voice and expertise of the optics and photonics community is amplified and integrated in the broader scientific discourse. The ISC midterm meeting, held in Paris last May 2023, was the first in which the ICO participated as a full member and served as a global meeting of eminent scientists, researchers and representatives of several scientific unions.

Francisco Javier Rodríguez Martínez, doctor in Computer Engineering and current deputy director of the school on the Ourense campus after almost seven years as head of the center, received on October 12, at the institutional event of Día del Pilar, a badge in gratitude from the Civil Guard Command for his collaboration in the fight against cybercrime. The Professional College of Computer Engineering of Galicia (CPEIG), of whose board of directors Rodríguez Martínez is a member, has collaborated with the security forces in terms of training. In cyber.gal, a node made up of public administrations and private institutions in Galicia that faces the threat of cyber attacks and also seeks to take advantage of the opportunities presented by the new digital era, researchers from the arroba unit of the armed institute, a team of agents specialized in the prevention and clarification of telematic crimes, have received training in technical issues such as information and communication technologies, BigData artificial intelligence, evidence extraction or forensic analysis.



One of the many roundtables held during the ISC midterm meeting.



Francisco Javier Martínez, doctor in Computer Engineering and deputy director of the School Computer Engineering at the Ourense campus.

Award to José Benito Vázquez from the Spanish Physical Society

AIRIS Project



José Benito Vázquez Dorrió, professor at the University of Vigo and teacher at the School of Mining and Energy Engineering.

The professor at the University of Vigo José Benito Vázquez Dorrió, teacher at the School of Mining and Energy Engineering, was awarded the Teaching and Dissemination of Physics Award from the Royal Spanish Society of Physics and the BBVA Foundation for his excellent contribution to the teaching and dissemination of physics and, particularly, applied optics, in addition to having a career that reveals an extraordinary passion for teaching through experiments carried out in classrooms. The jury highlighted his participation in multiple educational and informative activities in all areas of education.

Knowing that this award constitutes a highly competitive recognition, Vázquez Dorrió pointed out that “it is an honor and a recognition that provokes in me and, I believe in many other people, joy and encouragement”. The professor also highlighted that this award gives visibility to the educational and scientific transfer work carried out at the University, tasks that are “essential, unique, fundamental” and, in addition, directly linked with research. Likewise, Vázquez Dorrió expressed that “much of the work that is recognized was carried out at the School of Mining and Energy Engineering, a center that has long been an example and reference of the excellent training work it carries out its teaching staff and the quality dissemination of its research and its industrial transfer to society”.



Real
Sociedad
Española de
Física

R.S.E.F.

Higinio González Jorge, from IFCAE, in collaboration with the company COPASA, leads a project financed by the Ministry of Science and Innovation entitled: “Adaptive and intelligent railway inspection system (AIRIS)”. This project seeks to achieve, among others, the detection of cracks in sleepers through the use of digital cameras as well as a response, through computerized vision techniques based on artificial intelligence, to the variability of sleepers and bolts from different manufacturers; reduce the cost of inspection systems; adapt automotive systems to the railway sector; simplify railway instrumentation; and digitize transport infrastructures in order to obtain better maintenance, reduce costs and guarantee the safety of operations.



Higinio González Jorge, professor at the University of Vigo and teacher at the Department of Cartographic, Geodesic and Photogrammetry Engineering at the School of Aeronautical and Space Engineering.



Elena Martín gets access to HPC computing in-frastructure

The Spanish Supercomputing Network (RES), in the resolution of the Access Committee on the allocation of supercomputing hours, has allocated a total of 322.3 million hours in the second period of 2023. Elena Beatriz Martín Ortega, from IFCAE, has gained access to unique infrastructures for HPC calculations associated with the European RDE detonation project, with an allocation of 1,566 thousand hours.



Elena Beatriz Martín Ortega, doctor in Aeronautical Engineering and teacher at the Department of Mechanical Engineering, Machines and Thermal Engines and Fluids at the School of Aeronautical and Space Engineering.



This will be the new building of the Aerospace Engineering school on the Ourense campus

The new headquarters of the School of Aeronautical and Space Engineering on the Ourense campus has been baptized with the name “Chameleon” by its architects Javier and Carlos Rodríguez Alcoba, from García Rodríguez Alcoba Office of Architecture, from Madrid. One of the keys to the project is its great capacity to adapt to the environment in which the building will be built, a transition area between urban and rural that surrounds the south campus, a place where it will also occupy a plot with a pronounced slope from which the structure will take advantage. This unevenness will be used for the installation of green terraces on the roofs, thus giving continuity to the surrounding green areas. Additionally, the building will serve as a volumetric closure of the natural park that extends towards the heart of the campus without losing the prairie image that it currently has. The structure will be made up of three levels: one at ground level, another in the semi-basement and the third as a link between the previous two.



Location of the new building.



Interior of the new building.



Project for the new headquarters of the School of Aeronautical and Space Engineering on the Ourense campus.

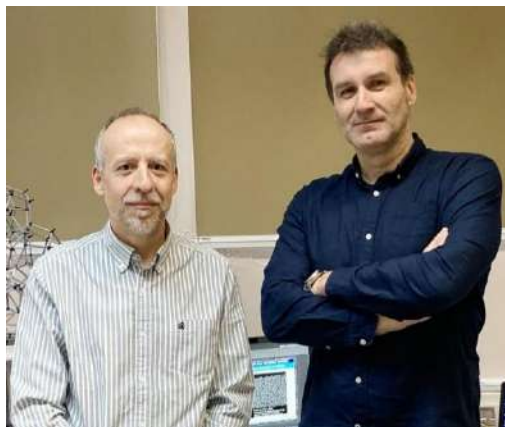
Creation of an R&D&I unit associated with the CSIC

Members of the Department of Applied Physics of the University of Vigo and the Rocasolano Institute of Physical Chemistry, of the CSIC in Madrid, created the Associated R&D&I Unit of the CSIC “Modeling and simulation of nanostructured materials”, which will allow these researchers to have the ideal framework to maintain and enhance their scientific collaboration in areas such as the thermodynamics of intrinsically disordered proteins and the self-organization of biological systems. The participants in this unit are Jacobo Troncoso and Manuel Martínez Piñeiro (principal investigators), Diego González and Claudio Cerdeiriña (members of the Molecular Thermophysics Group of the Ourense campus and promoters of the IFCAE), and Martín Pérez (from the Applied Physics Group 2 from the Vigo campus). Researchers Enrique Lomba and Eva González Noya participate on behalf of the Rocasolano Institute of Physical Chemistry.

The creation of this Associated Unit implies the recognition of the quality of the scientific work developed in collaboration and the establishment of a framework that facilitates the mobility of researchers between groups and also between doctoral students, who have easier access to the scientific and training capabilities of the IQF Rocasolano. In addition to this, the possibility of participating as a coordinated research group in competitive calls for research projects is opened. This unit has an initial duration of three years and is organized around the central axis of modeling new materials at a molecular scale and will focus from a triple perspective: experimental, theoretical and simulation. Finally, the collaboration will focus on topics such as the analysis of protein structure and functionality, the study of complex systems in aqueous environments, aggregation or self-organization in systems of biological interest, the design of new materials for the capture of carbon dioxide and the storage of hydrogen.



Eva González Noya and Enrique Lomba.



Martín Pérez and Manuel Martínez Piñeiro.



Diego González, Jacobo Troncoso and Claudio Cerdeiriña.

International Max Planck Research School Congress

Fifty researchers from the prestigious Max Planck Institute for Gravitational Physics in Hannover (Germany) chose Ourense to hold their International Research School, an event in which they debated the results of the work carried out separately in the LISA Pathfinder project, a satellite from the European Space Agency (ESA) aimed at validating the technologies that will be used in the future LISA mission. The congress was held from October 1 to 6 at the Pa-rador de Santo Estevo in Ribas de Sil, selected by the Institute of Physics and Aerospace Sciences, host of the event. Both Ángel Paredes, director of the IFCAE, and Humberto Michinel, director of the Ourense Aeronautics School, highlighted the importance of this event for both centers since the Max Planck Institute, dedicated to gravitational waves, is one of the most prestigious worldwide and is in charge of the LISA Pathfinder project, one of the most ambitious in the history of aerospace engineering.

Participating in the established conference program were, among others, the director of the Max Planck Institute Karsten Danzmann and several researchers from the IFCAE and the School of Aeronautics, such as Humberto Michinel, Antonio Ferriz and David Olivieri. The Ourense City Council invited participants to take part in activities aimed at making the historic center of the city known, with even a catamaran ride. The conference also included a conference in the Marie Curie room on the Ourense campus, where several IFCAE researchers (Higinio González, Elena Martín, Arno Formella and Fernando Veiga) presented some of the projects they are working on.



Members of the Max Planck Institute in As Burgas.



Members of the Max Planck Institute and the IFCAE in the town square of Ourense.



Members of the Max Planck Institute and the IFCAE in the Polytechnic Building on the Ourense campus.



MAX-PLANCK-INSTITUT
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(Albert-Einstein-Institut)



Members of the Max Planck Institute and the IFCAE with the mayor of Ourense Gonzalo Pérez Jácome at the town hall.