MINISTERIO
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AGENCIA ESTATAL DE INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2017

Turno de acceso general

Nombre: GUANCHE GARCIA, RAUL
Referencia: RYC-2017-23260
Área Científica: Ingeniería Civil y Arquitectura
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Título:

Advanced marine structures for marine renewable energy harvesting applications

Resumen de la Memoria:

Raúl Guanche is an internationally recognized expert in marine structures applied to marine renewable energies. After finishing his 6-year degree on Civil Engineering, he enrolled in the Master degree in Science and Technologies for Coastal Management at the University de Cantabria. His MsC Thesis was titled Longshore Transport on the Maresme Coast (Barcelona). Then he started in 2004 his PhD at the University of Cantabria. During this period, he has been involved in several national and international research projects focused on marine structure design and optimization. The investigation carried out on new numerical methodologies for marine structure analysis determined his PhD Thesis titled Functionality and Stability analysis of maritime structures based on a Reynolds Averaged Navier Stokes (RANS) Numerical Model.

He has been awarded with a Post-Doc grant from the Research Excellence Support program from the University of Cantabria. During a 2-years period, he made scientific progresses in the coastal structures field. He focused his research on wave loads estimation over coastal structures. During his post-doc period, the candidate spent a year as an invited researcher in HRWallingford, UK.

After his post-doc in the University of Cantabria, in 2010 Raúl joined the Environmental Hydraulics Institute of Cantabria where he created a new research group focused on Marine Renewable Energies. Nowadays the research group is conformed by 10 researchers. An international consolidated network has been built. Thanks to it a continuous participation in European projects have been secured. During the last 8 years he collaborated in more than 40 competitive research projects. He has been involved in 9 European projects (3 H2020, 3 FP7, 2 Interreg, 1 ERANET), 2 of them as a IP (2 H2020). At a national level, he has participated in 7 RETOS-COLABORACION (3 as IP), 4 INNPACTO (3 as IP), 3 Plan Nacional (2 as IP, one recently granted).

In addition, the candidate has conducted research work for more than 13 post-graduate students, four of them PhD Thesis. Nowadays he is currently supervising 2 PhD Students He has collaborated and promoted 9 patents, all of them related with marine structures. Most of them are licensed and some of them heading a precommercial stage. He participates as a reviewer of several scientific journals of high impact factor. He has also contributed as guest editor of the Journal of Marine Science and Engineering (Q2 in Marine Science and Q3 in Civil Engineering according to WoS). He has participated as a reviewer of European Projects (2015 and 2017) and national research projects (2010, 2014, 2015 and 2017). Nowadays he is one of the national representatives of in the International Electrotechnical Commission for wave energy devices. Moreover. He is co-chair of the 37th International Conference on Ocean, Offshore and Arctic Engineering in Madrid, Spain from June 17 22 2018, from the American Society of Mechanical Engineers where more than 1400 abstracts have been accepted and about 1500 attendees are expected.

Understand marine structure dynamics for energy harvesting is his main research goal. Renewables energies are called to become an important part of the energy mix. The candidate aims to support, based on his scientific skills, the development of sustainable technologies for marine renewable energy harvesting.

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Resumen del Currículum Vitae:

Raúl Guanche obtained a MSc in Science and Technology for Coastal Management (2004) and he presented his PhD Thesis in 2007, both at the University of Cantabria. After his pre-doc period, he has been awarded with a Post-Doc grant. Thanks to it, he deepened on his research skills focused on marine structures analysis and optimization.
In 2010, he jointed the Environmental Hydraulics Institute of Cantabria where he created a new research group focused on marine renewable energies. Nowadays he is leading a marine structures research line focused on marine structures engineering applied to ocean energy harvesting.
He has participated in more than 40 competitive R&D projects at a national and an international level. He has also collaborated in more than 50 technological transference projects with the most relevant players in the civil engineering and marine energy field: Iberdrola, EdP, Dragados, Drace, Esteyco, FCC, Ingeteam, SENER, Saitec, PROES, OHL, among others.
His research resulted in more than 56 scientific contributions. 25 of them are Q1 papers and 6 of them D1 too. He also contributed to 5 book chapters and monographies. He has participated 33 international peer-reviewed conferences, especially relevant for the marine renewable energy sector: OMAE (10), OCEANS (8), ICCE (6), EWTEC (6) y EERA Deep Wind (3). This publications resulted on a H-index of 11

and 531 cites.
He has collaborated and published 9 patents. All of them related with marine structures. Most of them already licensed and one of them it is been developed within the framework of a RETOS-COLABORACION project.
Raúl Guanche has supervised 15 Post-graduated works, 4 of them PhD Thesis (one of them being Marie Sklodowska-Curie fellow). Nowadays he is supervising 2 PhD Students and he is also participating on the Master of Offshore Renewable Energy (UPV-EHU).
He has ben the gest editor of an SI of the Marine Science and Technology Journal (Q2) and an independent expert European projects evaluator (OCEAN ERANET 2015 and 2017). He has also evaluated national research projects (ANEP) and international research projects (NSFC, Portugal). Finally, he has been collaborating as a reviewer in 4 Q1 journals.
Finally, Raul has been in charge of the preparation of numerous international, European and national and regional projects proposals, obtaining funds for more than 20 of them as PI or Co-PI.

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Turno de acceso general

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Título:

Operational Research and Applied Statistics (OR&AS) modelling in 'Competitive Bidding' and the 'Influence of weather in construction productivity'

Resumen de la Memoria:

Dr Ballesteros has been working in two major lines of research. Namely, Competitive bidding in Construction and the Influence of weather in construction productivity. Both comprise the application of Operational Research and Applied Statistics (OR&AS) techniques. Both lines are extremely different, but have been equally successful in different ways. The former is more academic, hence more theoretical and mathematically complex. It has allowed the candidate to publish many papers and build a solid reputation as a bidding expert in a small community previously dominated by economists and operational researchers. The second line is more applied and it has the potential of cutting construction costs significantly. It is attracting funding from private companies and UK Research Councils alike.

Additionally, the candidate has been working on another two areas: Scheduling and Sociometry. In scheduling the candidate has recently applied many OR&AS methods that were originally developed for his Competitive bidding research. Despite his previous inexperience in this field, the candidate has published his two sole-authored papers precisely in this discipline. The second area on Sociometry focuses on finding the optimum allocation of human resources in simultaneous projects while trying to maximize individuals group cohesion. It is a very interesting application of the discipline of Sociometry that has produced papers on different disciplines including project management and education.
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Resumen del Currículum Vitae:

Dr. Ballesteros-Pérez is a civil engineer (2002), geological engineer (2005), MSc in Project Management (2010) and holds a PhD in Engineering Projects and Innovation (2010), all from the Universitat Politècnica de València (UPV), Spain.

Since January 2016, he is Lecturer in the School of the Built Environment at the University of Reading (UK). Before joining this university, he worked for three years (2013-2015) as Assistant Professor at the Universidad de Talca (Chile) and for six years (2007-2012) as a part-time lecturer (Profesor Asociado) at the UPV.

Before joining the academia full-time in 2013, he was the Head of the Construction tendering department (2007-2012) in an international construction company. Before 2007, he had worked for 5 years as a construction project engineer in the Spanish construction private sector for two consultancy companies.

Since 2010 he has been the author of 23 international peer-reviewed journal publications, 23 conference papers, one book chapter and one book on bidding and operational research in construction. Currently, his (Scopus) H-index is 10. He is guest lecturer at the UPV and the Instituto Tecnológico de Sto. Domingo INTEC (Dominican Republic) where he teaches quantitative techniques in Project Management once a year.

His broad academic area of interest is Construction Project Management. His two major research lines to date are Operational Research and Applied Statistics (OR&AS) in Competitive Bidding and the Influence of weather in construction productivity. He has also developed some research strands and publications in other areas such as Sociometry and Scheduling.

He has secured 0.7 million to date in 4 grants as academic (PI in 2, Co-PI in 2). Previously, he and his team during his years as Head of Construction Tendering, were also awarded 2.35 million from 12 industry-based research projects from five Spanish and EU funders.

Award-wise, Dr Ballesteros received in 2010 a second prize for his entrepreneurial company project Smartbid in the Valencia Emprende contest. In 2014 he was recipient of the competitive Iberoamerican Research grant for young professors and researchers from Santander bank universities. In 2016 his project Weather-wise has been the winner of the prestigious Bowen Jenkins Legacy Fund (Chartered Institute of Building CIOB).

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Turno de acceso general

Nombre: HIDALGO GONZALEZ, JUAN JOSE
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Título:

Mixing and reaction of fluids in porous media

Resumen de la Memoria:

My main research line is density-dependent fluid flow and solute transport in porous media. This topic is relevant for scientific and applied disciplines such as hydrogeology, seawater intrusion, contaminant transport in soils, oil engineering, and CO2 injection in saline aquifers. My research results have contributed to theoretical knowledge of the behavior of multiphase flow in porous media and provided results with direct application to the CO2 injection technologies. It has been carried out in the context of international projects.

I have studied density-dependent problems through numerical simulations and theoretical development. I have addresses fundamental basic aspects (onset of instabilities, fluid flow structure) and applied the results to more practical issues (migration of plumes and upscaling).

My main results include the determination that hydrodynamic dispersion accelerates the onset of convective instabilities. Under these conditions the dissolution fluxes are independent of the Rayleigh number. My work provided numerical evidence of such scaling. I developed a theoretical framework base on the behavior of fluid interfaces around stagnation points that is able to predict the observed behavior of convective instabilities. The theoretical model also explains the porosity alteration patterns caused mixing-limited reactions that occur in such systems. The results of this research were used to develop an upscaled sharp interface model of the migration og CO2 at the regional scale.

I have also studied the effect of heterogeneity on thermal plumes generated by heat exchangers and the characterization of aquifer artificial recharge ponds.

I have participated in the development of numerical tools for the simulation of hydrological processes including density-dependent flow and code TRANSDENS , the graphical users interface Visual TRANSIN, which are used for research and consulting projects.

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Resumen del Currículum Vitae:

I am researcher at the Institute of Environmental Assessment and Water Research of the Spanish National Research Council (IDAEA□CSIC) in Barcelona (Spain). I have a Bachelor in Physics (Universidad de Córdoba, Spain) and a postgraduate in hydrology (International Groundwater Hydrology Course, CIHS). I did my Ph. D. at the School of Civil Engineering at the Technical University of Catalonia (Spain). I have developed my research career in the field of fluid flow and solute transport in porous media with special emphasis on problems related to the injection of CO2 in saline aquifers.

My research has contributed to the knowledge of the behavior of multiphase flow in porous media and provided results with direct application to the CO2 injection technologies. I have also contributed to the fields of geothermal energy, parameter estimation, and stochastic modeling. I have published the results of my research in high impact scientific journals such as Physical Review Letters, Geophysical Research Letters, Water Resources Research, Journal of Fluid Mechanics, and Advances in Water Resources.

I have collaborated with research groups from France (IPGP, Mines ParisTech), USA (MIT, Yale University), England (Oxford University, Warwick University), and Spain (UPC, CSIC) in the framework of international projects funded by the European Commission: SALTRANS, CO2-GRASP, MUSTANG, PANACEA. My participation in those projects, including a Marie Curie fellowship I was awarded, has allowed me to develop a professional network in which to continue my research.

I had made two postdoctoral stays. The first one at the Institut de Physique du Globe de Paris (IPGP, France) where I joined the CO2□GRASP Initial Training Network about CO2 sequestration. The second one at the Civil and Environmental Engineering Department of the Massachusetts Institute of Technology (MIT, USA) after being awarded with a Marie Curie fellowship (CO2□MATE project).

At IDAEA□CSIC I continue my research on porous media studying the feedbacks between fluid instabilities and mixing□limited chemical reactions. I participate in the meetings and contribute to reports and milestones of the projects MecMAT funded by the Spanish Ministry of Economy and Competitiveness of which I am the principal investigator and MHetScale funded the by the European Research Council.

I teach the course "Stochastic Modelling" in the Master in Geotechnical Engineering program (UPC) together with Prof. Marco Dentz and I co□supervise two PhD students.