basque center for applied mathematics

IC2019_Summer BCAM International Call

Postdoctoral Fellowship in CFD Modelling and Simulation

Job Offer	
Topics:	**Computational Fluid Dynamics modelling of seabed-fluid-structure interaction with application to offshore mooring systems** Applications are invited for a postdoctoral position in the CFD group (Ikerbasque Prof. Marco Ellero) at BCAM. The focus of the project will be on the accurate modelling of the interaction of submerged structures with complex rheological fluids representing seabed sediments. The latter feature is critical for the stabilization of floating platforms (e.g. offshore wind turbines) and the design of improved anchoring technologies for marine applications. A novel aspect of this project will be represented by the simulation of the fluid-structure interaction with the soft soil phase. This is a complex liquid-solid material (e.g. sands, clay etc.) formed by a suspension of fine particles in water. A varying concentration of the dispersed phase can lead to different complex rheological behaviour ranging from yield-stress, shear-thinning and viscoplastic effects. For a quantitative description of the full structure-fluid-seabed interaction problem, an accurate multiphase non-Newtonian model is required. The candidate will develop a multiphase model based on the meshless Smoothed Particle Hydrodynamics method to study several drag-embedded anchoring systems interacting with seabeds under different loading conditions. Simulation results will be validated against experimental data for scaled-down systems reproduced in the water tank facilities available at the Department of Fluid Mechanics at the *University of the Basque Country* (UPV/EHU). The project will be performed in collaboration with *the Nuclear Engineering and Fluid Mechanics Department and the Geodynamics Department (UPV/EHU) and Tecnalia Research & Innovation.*
PI in charge:	Prof. Marco Ellero (Ikerbasque Research Professor)
Salary and conditions:	**The gross annual salary of the Postdoctoral Fellowship will be 28,000 – 32,000€.**

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	It will then be on your own responsibility to make your yearly income declaration at the Bizkaia Treasury Agency. There is a moving allowance for those researchers that come from a research institution outside the Basque Country from EUR 1,000 to EUR 2,000 gross. *Free access to the Public Health System in Spain is provided to all employees.*
No Positions offered:	**#1**
Contract and offer:	1+1 years
Deadline:	**20th August 2019, 14:00 CET (UTC+1)**
How to apply:	Applications must be submitted on-line at: http://www.bcamath.org/en/research/job

Scientific Profile Requested	
Requirements:	• Promising young researchers. • Applicants must have their PhD completed before the starting date. PhD degree preferable in Mechanical, Naval, Chemical Engineering, Physics or Applied Mathematics.
Skills and track-record:	• Good communication and interpersonal skills. • Ability to effectively communicate and present research ideas to researchers with different background (e.g., mathematicians and engineers). • Ability to clearly present and publish research outcomes in spoken (talks) and written (papers) form. • Good command of spoken and written English.
Scientific Profile:	The preferred candidate will have: • Background in fluid mechanics, rheology, particulate systems or complex fluids. • Experience in modelling and simulation of multiphase flows using meshless particle methods such as smoothed particle hydrodynamics (SPH), dissipative particle dynamics (DPD) or moving particle semi-implicit (MPS) methods. • Knowledge of C/C++ or Fortran programming languages is required. • Experience in parallel programming for HPC is desirable.

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Application and Selection Process	
Formal Requirements:	The selected candidate must have applied before the application deadline online at the webpage http://www.bcamath.org/en/research/job The candidates that do not fulfil the mandatory requirements will not be evaluated with respect to their scientific profile.
Application:	Required documents: ▪ CV ▪ Letter of interest ▪ 2 recommendation letters ▪ Statement of past and proposed future research (2-3 pages)
Evaluation:	Based on the provided application documents of each candidate, the evaluation committee will evaluate qualitatively: the adaption of the previous training and career to the profile offered, the recommendation letters, the main results achieved (papers, proceedings, etc.), the statement of past and proposed future research and other merits; taking in account the alignment of these items to the topic offered.

Incorporation:	**Autumn 2019 or as soon as possible thereafter.** *The BCAM postdoctoral contract will start when the selected candidate has finished the PhD, i.e. after dissertation defence.*

EUSKO JAURLARITZA GOBIERNO VASCO

EXCELENCIA SEVERO OCHOA