Postdoctoral Fellowship in Postdoctoral Fellowship in Computational Mathematics and Fluid Dynamics

Job Offer

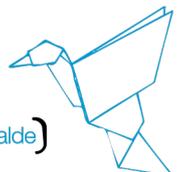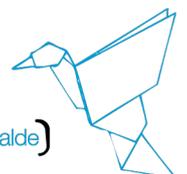| Topics:	Our research concerns state of the art adaptive stabilized FEM [1], the FEniCS open source software project for automated solution of PDE (fenicsproject.org), in an HPC setting with good scaling on supercomputers [2] and advanced applications in computational turbulence and FSI, including parameter-free prediction of the aerodynamics of a full aircraft and simulating the human voice apparatus in the EUNISON EU project (see http://youtube.com/ctlabtv for examples).
	Based on our computational mathematical methodology we have developed a New Theory of Flight [3], which enables understanding of the mechanics of flight. Our adaptive methodology applied to turbulent flow is described in the Encyclopedia of Computational Mechanics [4].
	We have recently received an EU Horizon 2020 e-infrstructure grant for interfacing our FEniCS-HPC framework and supercomputer applications in turbulent flow to an HPC cloud infrastructure developed together in the project consortium consisting of: BCAM, KTH, Atos, Cesga, EU-MATHS-IN, and more.
	We have also been selected to develop a MOOC on FEM and FEniCS by the KTH MOOC Steering Committee.
	Other recent awards include the high-profile PRACE grant for supercomputing, the Swedish Innovation Agency for industrial CFD, and Best Poster Award at the Bilbao Marine Energy Week for our work on modelling of floating offshore wind power.
	The research environment is international and

integrated with the department of Computational Science and Technology at KTH .

[1] Johan Hoffman, Johan Jansson, Niclas Jansson, Rodrigo Vilela De Abreu, Towards a parameter-free method for high Reynolds number turbulent flow simulation based on adaptive finite element approximation, Computer Methods in Applied Mechanics and Engineering, 2015

[2] Johan Hoffman, Johan Jansson, Niclas Jansson, FEniCS-HPC: Automated predictive high-performance finite element computing with applications in aerodynamics, Proceedings of the 11th International Conference on Parallel Processing and Applied Mathematics, PPAM 2015. Lecture Notes in Computer Science, 2015

[3] Johan Hoffman, Johan Jansson, Claes Johnson, New Theory of Flight, Journal of Mathematical Fluid Mechanics, 2015

[4] Johan Hoffman, Johan Jansson, Niclas Jansson, Rodrigo Vilela de Abreu, and Claes Johnson, Computability and Adaptivity in CFD, Encyclopedia of Computational Mechanics. 2016

PI in charge:	Johan Jansson
Salary and conditions:	**The gross annual salary of the Fellowship will be 28.000 - 32.000€.** 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 2000 gross. *Free access to the Public Health System in Spain is provided to all employees.*
No Positions offered:	**#1**
Contract and offer:	**2 years**
Deadline:	**July 14th, 2017 15:00 CET (UTC+1)**
How to apply:	Applications must be submitted on-line at: http://www.bcamath.org/en/research/job

| Scientific Profile Requested	
Requirements:	• Ability to demonstrate exceptional research accomplishments (or promise) • PhD degree (preferable in Mathematics or Computer Science) must have their PhD completed when the position starts.

	• Solid knowledge and experience of computational mathematics and FEM is a requirement, as well as software development for distributed memory architectures.
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 verbal and written English. • Demonstrated ability to develop or extend computational methods. • Programming competence in C++ and Python.
Scientific Profile:	The preferred candidate will have: • research experience and interest in adaptive FEM in a high-performance scientific computing setting,

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.
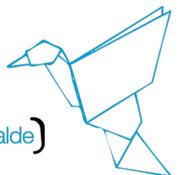
Incorporation:	October 2017 or as soon as possible thereafter.
	The BCAM postdoctoral contract will start when the selected candidate has finished the PhD, i.e. after dissertation defense.