basque center for applied mathematics

EXCELENCIA SEVERO OCHOA

IC2025_06_01 BCAM International Call

Postdoctoral fellow in Bayesian inference for brain simulation

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Job Offer	
Topics:	**The Basque Center for Applied Mathematics is hiring a Postdoctoral fellow for an initial duration of one year, renewable for an additional year based on satisfactory performance and for additional years based on funding availability. The position is funded by the Spanish Ministry for Science and Innovation.** The starting date is currently set at September/October 2025, but it is very flexible. The fellow will enter BCAM under the supervision of: • **Matteo Croci.** Google Scholar: https://scholar.google.com/citations?user=AmQKnwcAAAAJ&hl=en CV: https://croci.github.io/CurriculumVitaeWebsite.pdf • **Judit Muñoz-Matute**. Google Scholar: https://scholar.google.com/citations?user=-cvJu50AAAAJ&hl=en CV: https://sites.google.com/view/judit-munoz-matute/home?authuser=0 Furthermore, it will likely involve collaborations (including academic travel) with established researchers at UK, German, and Norwegian institutions. We seek candidates with a strong background in applied mathematics, statistics, computational engineering, or related fields. The successful candidate will have some expertise in the following fields: • Bayesian inference and/or (Markov-chain) Monte Carlo methods.

	• The numerical solution of partial differential equations. • Some coding experience is desirable. The actual postdoctoral project research content can be tailored to the preferences of the candidate. However, the ultimate objective of the wider research project is to perform infinite-dimensional Bayesian inversion to characterise the velocity field of the 3D partial differential equations describing brain fluid and solute movement. The candidate will be free to choose how to focus their efforts within this goal, whether in terms of theoretical, methodological, or applied research contributions. We have funding available to extend the position to a second year based on satisfactory performance. Second year research will additionally focus on combining the developed methods with the scientific machine learning techniques developed in the rest of the group. Note that a third-year extension is also possible, but not guaranteed, based on funding availability. Additionally, we will help and support any postdoctoral grant application of the candidate within the Spanish and/or the EU system. # APPLICATION FORM INSTRUCTIONS The application form requires an "Interest letter" and a "Scientific results achieved and research statement". Please fill these in as follows: • Interest letter. Please describe your research interests and your expertise. • Scientific results achieved and research statement. Explain why your background and/or past work is especially suitable for the position and the postdoctoral project objectives (see info below). Please substantiate your statements objectively. Statements such as "I am the best in the world at this" without proper justification will be ignored. If you are a passionate about Mathematical Desing, Modelling and Simulations, and eager to embark on a research career at BCAM, this opportunity is for you. Apply now and become part of our dedicated team at BCAM.
PI in charge:	Matteo Croci and Judit Muñoz-Matute

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Salary and conditions:	**The gross annual salary of the Fellowship will be 30.744 - 37.331€ according to experience.** It will then be on your own responsibility to make your yearly income declaration at the Bizkaia Treasury Agency. Additionally, we offer a moving allowance up to 2.000€. Should the researcher have a family at the time of recruitment: • 2.000€ gross in a single payment will be offered (you must be married-official register or with children and the certificate to prove it must be sent). • 1.200€ gross per year/per child (up to 2 children) will be offered (the certificate to prove it must be sent). *Free access to the Public Health System in Spain is provided to all employees.*
Contract and offer:	1 year
Deadline:	**21/07/2025 14:00 CET**
How to apply:	Applications must be submitted on-line at: https://joboffers.bcamath.org/

Scientific Profile Requested	
Requirements:	• Ph.D. Degree in Mathematics, Statistics, Engineering, or related fields.
Skills and track-record:	While the project itself can be tailored to the candidate experience, useful skills for the project are the following: • Bayesian inference AND/OR Markov-chain Monte Carlo methods AND/OR Monte Carlo methods for forward/inverse estimation. Related knowledge of basic statistics/uncertainty quantification/probability concepts.

	• The numerical solution of partial differential equations (PDEs) including related software. • Good coding skills (e.g., Python). • Ability to work effectively in a collaborative research environment.
Scientific Profile:	We seek candidates with a strong background in applied mathematics, statistics, uncertainty quantification, computational engineering, or related fields. The actual postdoctoral project research content can be tailored to the preferences of the candidate. However, the ultimate objective of the wider research project is to perform infinite-dimensional Bayesian inversion to characterise the velocity field of the 3D partial differential equations describing brain fluid and solute movement. The candidate will be free to choose how to focus their efforts within this goal, whether in terms of theoretical, methodological, or applied research contributions.

Application and Selection Process	
Formal Requirements:	The selected candidate must have applied before the application deadline online at the webpage: https://joboffers.bcamath.org/ The candidates that do not fulfil the mandatory requirements will not be evaluated with respect to their scientific profile. Additional documents could be requested during the evaluation process so as to check this fulfilment.
Application:	Required documents (see Topics section above for instructions): • CV • Letter of interest • 2 recommendation letters • Statement of past and proposed future research
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:	***1st September 2025***

AGENCIA ESTATAL DE INVESTIGACIÓN

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