

2 Postdoctoral Fellowship in Inverse Problems and Machine Learning

Job Offer

Topics:

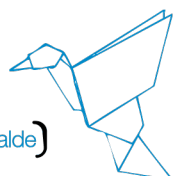
The Basque Center for Applied Mathematics (BCAM) is launching two postdoc positions of 2 years each within BCAM–Helsinki Lab on Machine Learning and Inverse Problems, a strategic joint initiative between BCAM and the University of Helsinki.

This is an exciting opportunity to join a newly established international laboratory at the forefront of the interface between inverse problems, partial differential equations (PDEs), and modern neural operator architectures. The lab is co-funded by the prestigious ERC Advanced Grant INVERSE-PDE (led by Prof. Matti Lassas, University of Helsinki) and BCAM, and is co-led by Dr. Pedro Caro (BCAM) and Prof. Matti Lassas.

The successful candidates will work on the mathematical foundations and algorithmic development of operator-based machine learning methods for inverse problems governed by PDEs. Specific research topics include:

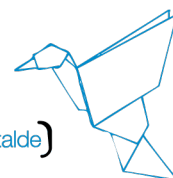
- Operator recurrent neural networks for elliptic inverse problems (e.g., Calderón's problem, Schrödinger-type equations).
- Non-iterative shape imaging using boundary measurements.
- Noise-aware operator learning frameworks.
- Rigorous approximation theory for neural operators in infinite-dimensional settings.

The research will directly contribute to the scientific objectives of the INVERSE-PDE ERC project and the strategic mission of the BCAM–Helsinki Lab. The positions offer a unique environment for early-career researchers to conduct high-impact mathematics at



	the intersection of analysis and machine learning, surrounded by an active international network and high-level mentoring.
PIs in charge:	Dr. Pedro Caro (BCAM) and Prof. Matti Lassas (University of Helsinki).
Salary conditions: and	The gross annual salary of the Postdoc Fellow will be: 31.359 € - 38.077€ depending on the candidate's years of experience. <i>It will then be the Postdoc Fellow own responsibility to make their yearly income declaration at the Bizkaia Treasury Agency.</i> Additionally, we offer a moving allowance of 1000€ (Spain/Europe) or 2000€ (rest of the world). Should the researcher have a family at the time of recruitment: 1. 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). 2. 1200€ gross per year/per child (up to 2 children) will be offered (the certificate to prove it must be sent). <i>Free access to the Public Health System in Spain is provided to all employees.</i>
Nº Positions offered:	2
Contract and offer:	2 years
Deadline:	October 15th, 2026, 14:00 CET (UTC+1)
How to apply:	Applications must be submitted on-line at: https://joboffers.bcamath.org

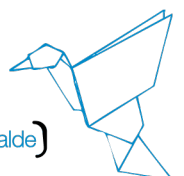
Scientific Profile Requested	
Requirements:	• Highly motivated researchers with a PhD in Mathematics, Applied Mathematics, or a closely related field completed before the contract starts. • The post holder will not be required to do any teaching, but if desired, he/she can deliver short courses of his/her choice at the PhD level or be involved in the supervision



	of graduate students. Organization of scientific events is strongly encouraged. The position is based at BCAM (Bilbao, Spain), but the researcher must be prepared to spend research visits at the University of Helsinki (at least one quarter of the total time).
Skills and track-record:	- A strong background in the analysis of PDEs, inverse problems, and/or numerical analysis. - Interest in the mathematical theory of machine learning and neural operators. - A proven track record of high-quality research publications in top journals/conferences. - Demonstrated ability to work independently and as part of an international collaborative research team. - Excellent communication skills in spoken and written English, with the ability to explain technical ideas to both specialists and non-specialists. - Beyond technical background, we value intellectual character: - Slow, careful thinking: patience to dwell on a problem and let deep understanding develop over time. - Critical thinking: questioning assumptions and distinguishing what is proved from what is merely plausible. - Independence and initiative: ability to set one's own direction and seek out new questions. - Openness to collaboration: genuine enjoyment of joint work and willingness to share ideas freely.
Scientific Profile:	The preferred candidate will have experience and research interest in inverse problems (analytical or numerical aspects), partial differential equations (PDEs), and the mathematical foundations of machine learning and neural operators.

Application and Selection Process

Formal Requirements:	The selected candidate must have applied before the application deadline online at the webpage: https://joboffers.bcamath.org
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	The candidates that do not fulfil the mandatory requirements will not be evaluated with respect to their scientific profile.
Application:	Required documents: ▪ CV: Including a list of publications. ▪ Letter of Intent / Motivation Letter: This letter should describe the candidate's research experience and background in inverse problems. In addition, candidates are encouraged to explain the relevance of their own favourite result, including the motivation behind it. ▪ 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:	Between 1st January and 30th June 2027
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European Research Council
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