basque center for applied mathematics

EXCELENCIA SEVERO OCHOA

IC2022_03 BCAM International Call

Postdoctoral Fellowship in Special Functions and Random Walks

Job Offer	
Topics:	"Inside the Generalized Master Equation for the Continuous-Time Random Walk" The proposed research project is focused on the derivation of the Generalized Master Equation (GME) for the Continuous-Time Random Walk (CTRW) as published in literature, e.g., [1,2], and on its specific determination for fractional diffusion [3]. Actually, the GME depends on a kernel function that is explicitly given in terms of the jumps and waiting-times distributions of the CTRW. Surprisingly, a systematic study concerning the features of the CTRW, the kernel of the GME and the resulting walker's distribution is not provided, yet. The aim of the research is to fill this literature gap in the view of the many applications of the CTRW and in particular because of the recent regime-transitions (exponential-to-fractional-to-Gaussian) observed in anomalous diffusion processes. [1] Klafter J and Silbey R 1980 Phys. Rev. Lett. 44 55–58 [2] Klafter J, Blumen A and Shlesinger M F 1987 Phys. Rev. A 35 3081–3085 [3] Hilfer R and Anton L 1995 Phys. Rev. E 51 R848–R851
PI in charge:	Gianni Pagnini
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 up to EUR 2.000 gross. *Free access to the Public Health System in Spain is provided to all employees.*

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Contract and offer:	1 year + 1 year
Deadline:	**29th of April 2022**
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 contract starts.
Skills and track-record:	• Good interpersonal skills. • A proven track record in quality research, as evidenced by research publications in top scientific journals and conferences. • Demonstrated ability to work independently and as part of a collaborative research team. • Ability to present and publish research outcomes in spoken (talks) and written (papers) form. • Ability to effectively communicate and present research ideas to researchers and stakeholders with different backgrounds. • Fluency in spoken and written English.
Scientific Profile:	The preferred candidate will have: • Strong background in special functions and integral transforms. • Background in fractional calculus and fractional modelling. • Knowledge in statistics and probability. • Good programming skills in Mathematica and/or Maple and/or MathLab. • Interest and disposition to work in interdisciplinary groups.

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. Additional documents could be requested during the evaluation process so as to check this fulfilment.
Application:	Required documents: ▪ CV ▪ Letter of interest ▪ 2 recommendation letters ▪ Statement of past and proposed future research (2-3 pages) related with the project of this call
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:	As soon as possible