



Dauphine | PSL | CEREMADE
UNIVERSITÉ PARIS UMR CNRS 7534

Contacts

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Location

Université Paris-Dauphine

Place du Marechal de Lattre de Tassigny
75016 Paris
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Postdoctoral position at CEREMADE

“Stochastic processes for energy transport: models and simulations”

Topic The primary object of this research is to contribute to the mathematical analysis of nonequilibrium stochastic dynamics, in the aim of better understanding nonequilibrium steady states in physical systems which are subject to external forcings.

Progress is expected at the theoretical and/or the numerical levels. Theoretical investigations will focus on examining macroscopic energy transport resulting from some microscopic chaotic or stochastic dynamics, which conserve energy. Depending on the presence of other conservation laws, the energy transport can be ballistic, diffusive or super-diffusive.

On the numerical side, the aim is to develop alternatives to standard approaches for the estimation of transport coefficients, such as Green-Kubo formulas or nonequilibrium molecular dynamics. This includes performing the numerical analysis of the algorithms which will be proposed, and testing them on reference systems such as atom chains.

Scientific context The project will be carried out at CEREMADE in collaboration with A. Iacobucci and S. Olla, and in interaction with the researchers of the other member institutions (CERMICS-Ecole des Ponts and SIMSMART-Inria Rennes). CEREMADE is a Mixed Research Unit (UMR 7534, CNRS and Université Paris-Dauphine) that operates within the dynamic scientific community of Paris. Its research topics cover various fields of applied mathematics, with applications ranging from dynamical systems, quantum chemistry, and statistical physics to economics, finance, image and signal processing, as well as data analysis and classification theory.

Position details

The position is funded by the ANR SINEQ.

Location:	Univ. Paris-Dauphine-PSL, Paris, France
Duration:	18 months
Starting date:	at earliest convenience, no later than October 2024
Application deadline:	June 2024
Net remuneration:	2000 euros

Full financial support for workshops, conferences and travelling for scientific activity will also be provided.

Candidate profile

We are currently seeking for a highly motivated, enthusiastic and interested candidate. Applicants must hold a PhD in applied mathematics in at least one of the following fields: theory of stochastic processes, functional analysis, probability theory, theory of partial differential equations. A familiarity with the associated numerical analysis, or an interest in molecular dynamics and computational statistical physics methods would be beneficial, but not required. The candidate's capabilities must be supported by a competitive track record.

The selection process will actively and thoughtfully recognize the diversity and range of qualities and perspectives that applicants bring to the project.

How to apply

Inquiries and applications should be sent to iacob@ceremade.dauphine.fr.

Full applications should contain:

- a detailed CV
- the list of publications
- a short research statement
- two letters of recommendation and/or names and e-mail addresses of scientists willing to support the application

For informal inquiries, kindly send an email with your CV, detailing your suitability for the position.