



H.F.R.I.
Hellenic Foundation for
Research & Innovation

Description of the funded research project
1st Call for H.F.R.I. Research Projects to Support Faculty Members &
Researchers and Procure High-Value Research Equipment

Title of the research project: Scaling stochastic dynamics.
From microscopic interactions to macroscopic phenomena

Principal Investigator: Ioannis Kontoyannis

Reader-friendly title: SCALINCS

Scientific Area: Mathematics

Institution and Country: Greece

Host Institution: Foundation for Research and Technology,
Hellas (FORTH)

Collaborating Institution(s): National & Kapodistrian
University of Athens, Athens University of Economics and
Business, University of Cambridge, IMPA Brazil

Project webpage: scalincs.iacm.forth.gr



Budget: 170,000 euros

Duration: 36 months

Research Project Synopsis

The goal of the project is modelling and analysis of complex systems motivated by problems in engineering sciences and physics. The dynamics of these systems are prescribed at a microscopic scale by means of stochastic processes.

We aim to identify emergent macroscopic phenomena, and to relate quantitatively the macroscopic characteristics of these systems to the parameters of their microscopic interactions.

Project originality

Our goal is to derive effective macroscopic descriptions for large scale systems with complex interactions that evolve away from equilibrium. Further, we aim to relate macroscopic observables with the microscopic details of these systems.

Such outcomes will help deepen the community's understanding of fundamental modelling problems that are amenable to rigorous analysis. This understanding can then be extrapolated to models not specifically treated in this project, and to applied problems arising across the spectrum of research in the natural sciences and in engineering.

The importance of this funding

The funding of my research through H.F.R.I. has facilitated collaborations with colleagues on the very exciting topic of this project, as well as the funding of your researchers (Ph.D. candidates and post-doctoral researchers) as part of this project. All these would have been extremely difficult – if not impossible – to accomplish without this funding.



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COMMUNICATION

185 Syggrou Ave. & 2 Sardeon St. 2
171 21, N. Smyrni, Greece
+30 210 64 12 410, 420
communication@elidek.gr
www.elidek.gr