



ÉCOLE POLYTECHNIQUE

Laboratoire de Physique de la Matière Condensée
Laboratory of Condensed Matter Physics
F-91128 Palaiseau Cedex FRANCE



POSTDOCTORAL POSITION

A two-year postdoctoral position is opened at the Laboratory of Condensed Matter Physics, Ecole Polytechnique (Palaiseau, France), funded by the French National Research Agency (ANR) within the project “INADILIC” (coordinated by Dr. Denis Grebenkov).

Description of the project

Transport of macromolecules, organelles, vesicles or exogenous tracers in living cells is a very complicated process that determines and controls many biochemical reactions, growth and functioning of cells. Random trajectories of individual tracers are recorded in a single-particle tracking (SPT) experiment and then analyzed to discriminate between different physical mechanisms (e.g., “caging” in the overcrowded cellular environment, visco-elastic properties of the cytoskeleton, hierarchical geometrical structure of the cytoplasm and/or nucleus, etc.) and to identify the appropriate theoretical model (e.g., continuous-time random walks, generalized Langevin equation, diffusion on fractals, etc.). Since an ensemble average is often unavailable, one faces a challenging problem of inferring dynamical, structural and functional properties of living cells from a limited (small) number of individual random realizations of an unknown stochastic process. The project aims at gathering physical, biological and statistical expertise to build a reliable inference procedure for the analysis of SPT experiments.

The candidate is expected to have a PhD in theoretical physics or/and mathematical statistics, to have an extended experience in numerical simulations, mathematical modeling and data analysis (in particular, programming skills in Matlab or similar scientific computing systems), and to be strongly motivated by interdisciplinary research. The candidate should fluently speak English (French is recommended but not mandatory).

The salary before taxes is about 2900 Euros/month. The beginning of the postdoctoral contract is negotiable (starting from January 2016).

The application includes CV, list of publications, statement of research, and list of the names and coordinates of three scientists who can write a letter of recommendation on the candidate's behalf. The candidates are invited to email their applications to the project coordinator, Dr. Denis Grebenkov (email: denis.grebenkov@polytechnique.edu).

Further information about the project (including related publications) and the offered postdoctoral position can be found on the project website <http://www.inadilic.fr>, the coordinator's webpage <http://pmc.polytechnique.fr/pagesperso/dg> or requested by email.