European Research Council
Established by the European Commission

UNIVERSITÉ CÔTE D'AZUR

PhD Position in Mathematics: Probability and applications

Université Côte d'Azur,
Laboratoire de Mathématiques J.A. Dieudonné, Nice, France

● LOCATION

Université Côte d'Azur is located on the French Riviera. It is one of the ten French universities distinguished by a label of excellence (IDEX). It is also linked to other international research institutes: INRIA Sophia-Antipolis, which is a computer science institute, and the 3IA Côte d'Azur, which is an artificial intelligence institute.

The Dieudonné Mathematics Laboratory is located on the Valrose campus of the Université Côté d'Azur, in downtown Nice. The research activity covers a broad spectrum of topics in mathematics, including a strong team in probability and statistics.

The successful candidate will work at Dieudonné Mathematics Laboratory.

● SCIENTIFIC DESCRIPTION

The PhD student will work in the framework of the ERC AdG project ELISA (Exploration for Large Interacting Systems of Agents), directed by Professor François Delarue. This ERC project deals with mathematical theories and numerical tools for mean field models, which are used to describe the statistical state of a population. This includes mean-field models for which the population state is itself random. A key objective is to show that randomization can enable a form of exploration, with theoretical and numerical advantages and benefits in statistical learning. Applications include mean-field models of rational agents, such as mean-field control problems or mean-field games. The PhD student will work on one of the project's axes, depending on her/his own skills: theoretical subjects will address mollification properties of noises on the space of probability measures and

applications to uniqueness of related mean field models (in words, noise may prevent the emergence of singularities); more numerical subjects will address the computational impact of the noise on the existing algorithms for solving related models.

● POSITION

This is a full-time position, for 3 years. Candidates should have a master's degree in mathematics or applied mathematics, with a strong background in probability and stochastic calculus. Programming skills will be appreciated but are not mandatory. Knowledge in partial differential equations will also be appreciated.

Université Côte d'Azur offers certain facilities. In particular, new researchers can benefit from a temporary accommodation of 1 to 3 months at the Faculty Club of Nice.

The position will be open from September 1st 2022.

● APPLICATION PROCEDURE

Applicants may contact François Delarue (francois.delarue@univ-cotedazur.fr) for any questions. Applications should include: a letter of motivation, a curriculum vitae, transcripts of undergraduate and graduate degrees and at least one reference letter. They should be sent to François Delarue.

Pre-selected candidates will be interviewed online.

Applications are open till May 31st 2022.