Call 2018 for positions as PhD student in Mathematics at "Sapienza" Università di Roma

Description of the three projects funded by other institutions.
Each project will provide financial support for one fellowship as PhD student.

Project 1

Title of the project

SQUARE4ECVs
Scientific Quality Assessment and Report for ECVs
Copernicus C3S_511 Quality Assessment of ECV (Essential climate variables) Products

Webpage: `https://climate.copernicus.eu/`

Work package (WP7, task 7.2) of the project directed by
Dr. Artale and Dr. Marullo (Enea Frascati).

Funding institutions

ECMWF Copernicus Procurement
CNR (Scienze dell'atmosfera e del clima)

Contacts

Prof. Camillo Cammarota
Webpage: `http://www1.mat.uniroma1.it/~cammarota/`

Description of the project

Analysis (assesment) of multivariate time series of ECV (Essential climate variables): subsurface and surface temperature, subsurface Salinity, Ocean Heat fluxes, subsurface currents.
The mathematical methods to be used and developed are tentatively: Dynamical models of time series, embedding and attractor reconstruction; estimation of trend, seasonal component and noise; multi-channel singular spectral analysis, multi-scale resolution and wavelets.

Pre-requisites

Affinity with the mathematical methods and models required by the project.

Project 2

Title of the project

Quantitative Risk Assessment in Microbiological Food Safety

Funding institution

Istituto Superiore di Sanità (ISS)
Dipartimento Sicurezza Alimentare, Nutrizione e Sanità Pubblica Veterinaria

Contact

Prof. Marco Isopi
Webpage: `http://www1.mat.uniroma1.it/~isopi/`

Description of the project

The project aims to estimate the contribution of different animal/food/environmental sources to the overall burden of human illness caused by the different pathogens that from the animal reservoir are transmitted to humans trough the food chain and their impact in order to prioritize the control options in both the pre-harvest and post-harvest fields. To date models have been developed for Salmonella and Campylobacter. The extention of those models to other foodborne pathogens, in particualr Shigatoxin producing E.col, Listeria and foodborne viruses, will be studied.

Webpage: `https://www.iss.it/?p=29`

Pre-requisites

Math modelling for life sciences.
Risk analysis in a microbiologica context.
Data Analysis.
Programming.
Numerical methods.

Project 3

Title of the project

HiCoS "Higher Codimension Singularities: Minimal Surfaces and the Thin Obstacle Problem"

Funding institution

European Research Council (ERC)
Starting Grant (ERC-2017-STG n. 759229)

Contact

Prof. Emanuele Spadaro
Webpage: `http://www1.mat.uniroma1.it/people/spadaro/main.html`

Description of the project

Study of higher codimension singularities in geometric analysis (for instance, minimal surfaces, harmonic maps, curvature flows etc.) and of regularity for free boundary problems.

Pre-requisites

Solid knowledge of regularity theory for solutions of variational problems and partial differential equations.
Basics of geometric measure theory.