IC2021_02 RESEARCH TECHNICIAN IN MESOSCOPIC FLUID DYNAMICS MODELLING AND SIMULATION

Company Description

BCAM is the Research Center on applied mathematics created with the support of the Basque Government and the University of the Basque Country, which aims to strengthen the Basque science and technology system, by performing interdisciplinary research in the frontiers of mathematics, talented scientists' training and attraction, so the excellence of our results are recognized by the Society.

Information

Deadline: 2021-03-01
Category: Business
Province: Bizkaia
Country: Basque Country
City: Bilbao

Company

BCAM

Main functions, requisites & benefits

Main functions

Applications are invited for a research technician position in mesoscopic modelling blood coagulation at the CFD group (BCAM) in collaboration with Biocruces Hospital. The coronavirus SARS-CoV-2, responsible for the current pandemic, consist of a nanoscale spherical capsid decorated with protruding functional proteins. The alignment of the such proteins with specific receptors of the human cells determines the linkage and further insertion of the viral genetic material into the cells. At the nanoscale, the rotational diffusion of such decorated objects may exhibit characteristic deviations compared to a simple nanosphere. Moreover, the type and distribution of the surrounding proteins can provide rotational signatures that differentiate various types of virus, thus providing relevant biomarkers. The goal of this project is to explore the potential of microrheological characterization of viral solutions as a tool for virus-identification and characterization. The effect of the decorating-proteins morphology and distribution over the dynamic of virus will be investigated using the smoothed dissipative particle dynamics method. The results of this project will provide relevant mesoscopic information to construct a multiscale framework to investigated COVID19-related pathologies.
The postdoctoral candidate will work under the supervision of Ikerbasque Prof. Marco Ellero (CFD group, BCAM) on the developments and use of mesoscopic particle-simulation methods to better understand changes in the translational and rotational diffusivity of viruses.

Requisites

Promising young researchers. Applicants must have their their Bachelor's or Master degree preferable in Engineering, Mathematics, Physics or related fields.