

Helmholtz Call for Chinese Applicants Interested in Running for CSC 2021 Fellowship

Helmholtz Centre: Forschungszentrum Jülich GmbH – www.fz-juelich.de
Department/Institute: Theoretical Physics of Living Matter / Institute of Biological Information Processing and Institute for Advanced Simulation
https://iffwww.iff.kfa-juelich.de/~fedosov/D_Fedosov.html
Supervising scientist: Dr. Dmitry A. Fedosov
Research Field: Active Matter, Biophysics, Computational Physics
Position open for: Postdoc X
Title of the research: Active soft micro-robots

More description of research topic:

Biological cells are able to generate intricate structures and respond to external stimuli, sculpting their membrane from inside. Simplified biomimetic systems or active soft micro-robots can aid in understanding the principles which govern these shape changes and mimic certain cellular functions. Our recent study (Nature, 586:52, 2020) with fluid vesicles enclosing self-propelled active particles shows the formation of a variety of non-equilibrium vesicle shapes and active shape fluctuations. This investigation serves as one of the first steps toward the design of cell-mimicking active micro-robots, which can perform a certain task or function. In this project, a researcher will explore various strategies for the control of such soft active systems using numerical simulations, in order to advance toward the design of smart soft micro-robots. Interesting directions include possible strategies for rendering directional mobility and some sort of sensing capabilities in such active systems. In this project, one of the best European super-computing facilities will be used for simulations.

Specific requirements:

- A PhD degree in physics, biophysics, applied mathematics, or a relevant engineering discipline.
- Good programming skills and experience with numerical modelling.
- Good knowledge of English (speaking and writing)

Funding: CSC-scholarships will be increased by hosting institution (500 €month and costs for health, emergency-call and liability insurance (50 €))

Working Place: Forschungszentrum Jülich, Germany (near Cologne)

Earliest Start: September 2021

Language Requirement: Very good knowledge of English language, written and spoken. German language courses are organised in the context of our in-house training program and are free of charge.

Name and Address of the Supervisor: Dr. Dmitry A. Fedosov, Forschungszentrum Juelich, Institute of Biological Information Processing (IBI-5), 52425 Juelich, Germany;
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