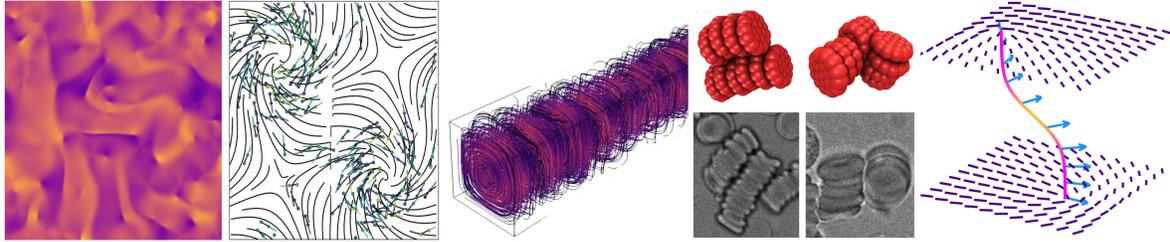




January 27, 2021

RE: Two ERC-Funded PhDs



Two *fully funded* PhD studentships in active biological matter are available in the [Institute for Condensed Matter and Complex Systems](#) at the University of Edinburgh with Dr Tyler Shendruk.

We are seeking computational physics students, who are interested in simulating intrinsically out-of-equilibrium soft materials. Biological matter is wonderfully complex — it can often flow like a liquid, orient like a liquid crystal, spontaneously move, and produce dynamic structures on multiple scales.

This project will investigate the dynamics of particles embedded in active biological fluids that spontaneously flow due to internal energy. The interdisciplinary basis of this project leverages recent discoveries in the fields of active matter and colloidal liquid crystals to realize otherwise impossible pathways to dynamics self-assembly of mesoscale structures. PhD researchers will develop and use novel numerical algorithms to study biomimetic fluids composed of passive elements suspended in a spontaneously flowing liquid crystal. They will investigate the interactions and dynamics of passive colloids, exploring whether pairs of colloids form self-assembled dimers and investigating whether many small colloids form a whirling halo around a larger, counter-spinning colloid. Researchers will develop mathematical models and algorithms to understand the self-assembly of such colloidal structures.

Group members work in a collaborative and intradisciplinary environment, and become familiar with cutting-edge modelling techniques over the course of their research. Research responsibilities include developing mathematical models and numerical simulations to understand the self-assembly in active matter. Applicants should have experience with numerical modelling. A relevant Masters degree and/or experience in biophysics, hydrodynamics, soft condensed matter physics or non-equilibrium dynamics will be considered an asset. Applicants possessing experience with numerical simulations are particularly encouraged to apply, as are skilled programmers.

We are particularly eager to see diverse applicants who demonstrate creativity, and an eagerness to computationally model exciting and dynamic systems. The studentships are funded by a grant from the European Research Council for a period of 42 months, covering tuition fees and a competitive stipend. The start date is flexible and open and open for discussion — candidates wishing to start in the spring are welcome. Enquiries are welcome and should please be directed to t.shendruk@ed.ac.uk or visit the project descriptions ([one](#) and [two](#)).

Sincerely,

Tyler N Shendruk