

Bonn-Cologne Graduate School of Physics and Astronomy

Intensive Week Course

Living Matter Hackathon

September 26 - 30, 2022, 9⁰⁰ - 16³⁰

Seminar room THP, University of Cologne



Lecturer: Dr. Jens Elgeti, Research Center Jülich

Abstract:

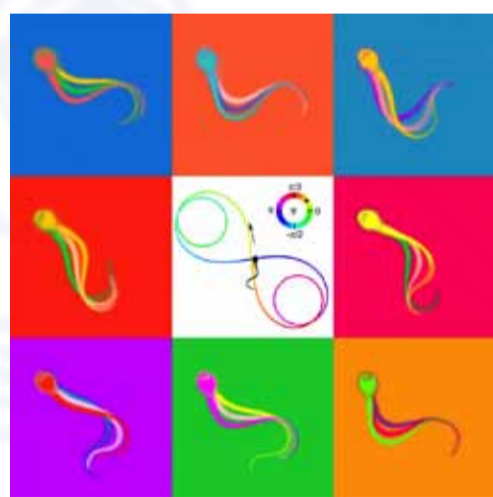
“Life is not in equilibrium” - this simple statement shows a gap in our physical understanding of the world. Living matter such as motile bacterial colonies, developing embryos or growing plants, does not fulfill the criterion of equilibrium and constantly converts energy. Particularly for living matter, this drive out of equilibrium stems from the material itself: Cells move and pull, they grow and divide, leading to novel “living” terms in the classical description of matter.

While living matter takes many forms, we will focus on two particular forms of activity: Motility or Micro-swimmers, where molecular processes generate forces driving the swimmer, and growth, where matter is not conserved, but generated by the material itself.

In this advanced course we learn about living matter systems and develop minimal computer models for illustration and understanding. The course is organized as a one week hackathon including lectures on living matter but most importantly collaborative and interactive projects to develop computer simulations of active matter, thus getting hands-on experience with state-of-the-art computational techniques for living matter systems.

No fees are required. The number of attendants is limited to 12.

Please apply by June 15th by email to j_elgeti@fz-juelich.de stating your motivation, physics, and programming background. Late applications are possible as long as places are available.



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