PHYSICAL MATH SEMINAR

Self-organized patterning in complex fluids

Giulia Celora

University College London

ABSTRACT:

Understanding how multicomponent systems self-organise to control their emergent dynamics across spatial and temporal scales is a fundamental problem with important applications in many areas; from the design of soft materials to the study of developmental biology. In this talk, I will discuss how we can use mathematical modelling to understand the role of microscale physical interactions in the self-organisation of complex fluids. I will illustrate this by presenting two examples. Firstly, I will discuss self-organization in stimuli-responsive polyelectrolyte gels surrounded by an ionic solution; secondly, I will discuss self-organization during collective migration of multicellular communities. Our results reveal hidden connections between these two initially disconnected applications hinting at the existence of general principles controlling self-organisation of both inanimate and living matter.

TUESDAY, OCTOBER 29, 2024

2:30 PM – 3:30 PM

Building 2, Room 361

**Note room change*

MIT MATHEMATICS

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