Seminar

MAX PLANCK INSTITUTE
FOR DYNAMICS AND
SELF-ORGANIZATION

Models of biologically active fluids and flows

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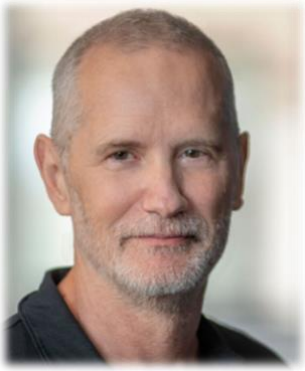
New York University & Flatiron Institute
New York City



From swarms of swimming bacteria to the moving contents of living cells, biology is replete with active systems whose microscopic constituents interact by performing mechanical work on a surrounding fluidic medium. This can lead to large-scale, sometimes functional, self-organized structures and complex dynamics. I'll overview the modeling of such systems, focusing first on continuum kinetic theories that couple microscopic and macroscopic scales to describe suspensions of active particles, such as swimming microorganisms. These PDE models have lots of fascinating dynamics in bulk, under confinement, and as part of more complex systems. Second, I'll discuss the coarse-graining of motor-loaded fiber assemblies to active porous medium models. These models evince novel instabilities and have (apparently) global attractors that teach us about the self-organization and emergence of large-scale cellular flows during development.

Monday, March 11th, 2024 at 2:15 pm

MPI-DS, Prandtl Lecture Hall
Am Fassberg 11, Göttingen and
Zoom Meeting ID: 959 2774 3389
Passcode: 651129, direct link

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