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Engineering Sciences and Applied Mathematics

Reiss Lecture Series Presents:

The 'Superfluid-Like' Behavior of Active Matter

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Active matter systems comprised of self-propelled microscopic particles, such as swimming bacteria and synthetic catalytic nanomotors, exhibit a fascinating variety of behaviors from enhanced diffusion to phase separation into dilute and dense regions that resembles an equilibrium gas-liquid coexistence. Due to their self-propulsion, active particles exert forces on boundaries, which can result in the motion passive bodies. Even more interesting, under shear the stress generated by active particles can reduce the viscosity of an active suspension to zero – a 'superfluid.' In this talk Professor Brady discusses the mechanics of active colloids and explains the origin of motion, enhanced diffusion and the 'superfluid-like' behavior in active matter.