Institute of SCIENCE TOKYO

Advanced Research Center for ***Quantum Physics and Nanoscience***

量子物理学・ナノサイエンス第 126 回特別セミナー

Nonreciprocity in microswimmer hydrodynamics

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日程　：　11 月 26 日（木）13:30 －

場所　：　本館 1 階 M-124 講義室および Zoom*

概　要

Motility at cellular scale is mechanically constrained by the surrounding flow dynamics. Over the last two decades, research into the hydrodynamics of microswimmers, such as bacteria, plankton, and sperm, has expanded significantly, bridging multiscale mechanics from intracellular force regulation to flexible body dynamics and transport in external flows. Due to the nature of hydrodynamic equations at the cellular scale, nonreciprocal deformation is essential to generate net propulsion, a principle known as the Scallop Theorem. In this talk, I will provide an overview of several theoretical and modelling frameworks for microswimmer locomotion, ranging from fluid equations and noncommutative gauge field theory to dynamical metamaterials such as odd elasticity, nonequilibrium statistical mechanics, and data-driven modeling via a deep Koopman autoencoder.

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※本セミナーは学術変革領域(A)「動的物質科学の創成 量子と古典の枠を超える」との共催です。
＊Zoom 登録リンク： https://zoom.us/meeting/register/e5xUoH2CQcOaBSokj4Rbxg

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