SEMINAR SERIES

北京大学力学与工程科学学院
湍流与复杂系统全国重点实验室

Liquid fragmentation and disease transmission

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时 间：2025 年 12 月 19 日 周五 16:00—17:00

地 点：新奥工学大楼 3F - 3048 会议室

主持人：谢金翰

内容简介：
The fragmentation of air-liquid interfaces, leading to the formation of droplets of a range of sizes and speeds, plays a critical role in a many engineering and biophysical systems. For disease transmission applications, pathogen transport enabled by the emission of droplets fundamentally shapes the degree and severity of contamination. Examples are found in respiratory exhalations and wetted leaves for foliar diseases relevant to agriculture. A crucial mechanism initiating the liquid fragmentation process is the hydrodynamic instabilities triggered by impulsive forcing, which perturb and disrupt an air-liquid interface. We combine theoretical, numerical, and experimental approaches to investigate a variety of impulsive interfacial flows responsible for drop formation. In these cases, we discuss how liquid fragmentation occurs due to droplet splashing, stretching and unsteady shearing.

报告人简介：

沈乃坚，香港科技大学数学系助理教授。沈博士本科及硕士毕业于澳大利亚墨尔本大学数学系应用数学专业，随后于 2021 年获得美国加州理工学院航空航天专业博士学位。2021 年加入麻省理工学院流体与疾病传播实验室担任博士后研究员。2025 年入职香港科技大学继续开展流固耦合，磁流体及等离子体物理，流动不稳定性，多相流，以及数学流行病学等方面的研究。

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