

FLUID MECHANICS TOUR OF THE ALPS



An itinerant seminar series at the heart of Europe

Influences of Interfaces: From Surface Roughness to Thin Films Near Edges

In this talk I sketch some recent themes* from my research group, starting with a brief survey of some of the fluid mechanics problems that we have been investigating in recent years. Then, I discuss in more depth two problems: 1) the motion of particles near rough boundaries, where three dimensional helical trajectories are possible, and 2) examples of similarity solutions for nonlinear equations involving thin-film flows. For the latter topic, I describe an example involving two independent variables, which is the common case, and an unusual case involving three independent variables. Each is illustrated by an experiment and rationalized with an analysis of the appropriate thin film equation.

*The research described was performed by many people in my research group, as well as some external collaborations.



ETH Zürich

Friday 15 March 2024

Time: 14:15

Location: LEE E 101

Followed by apéro

Professor Howard A. Stone received a Bachelor degree in Chemical Engineering from the University of California at Davis in 1982 and a PhD in Chemical Engineering from Caltech in 1988. Following a postdoctoral year at the University of Cambridge, in 1989 he joined the faculty of the School of Engineering and Applied Sciences at Harvard. In July 2009 he moved to Princeton University where he is Donald R. Dixon '69 and Elizabeth W. Dixon Professor in Mechanical and Aerospace Engineering. Professor Stone's research interests lie at the interface of engineering, chemistry, physics, and biology. He uses experiments, theory, and simulations in microfluidics, multiphase flows, electrokinetics, flows involving bacteria and biofilms. He received the NSF Presidential Young Investigator Award, is a Fellow of the American Physical Society (APS), and is past Chair of the Division of Fluid Dynamics of the APS. He is editor of Annual Review of Fluid Mechanics and serves on the editorial or advisory boards of Physical Review Fluids, Langmuir, Philosophical Transactions of the Royal Society, and Soft Matter. Professor Stone received the G.K. Batchelor Prize in Fluid Dynamics in 2008 and the Fluid Dynamics Prize of the APS in 2016. He was elected to the National Academy of Engineering in 2009, the American Academy of Arts and Sciences in 2011, and the National Academy of Sciences in 2014.

Professor Howard Stone
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