# SEMINAR SERIES

## 湍流与复杂系统全国重点实验室

# How things break

## The physics of the fragmentation of solids

报告人：Nicolas Vandenberghe

时　间：3 月 20 日 周四 下午 15:00

地　点：工学院 1 号楼 210 会议室

主持人：李存标 教授

报告内容摘要：

When a glass is dropped on a hard floor, it shatters into numerous fragments of various sizes. Cohesion forces keeping the material together compete with momentum that drives the fragmentation. Though largely encountered in nature and industry, the process is imperfectly understood. Current approaches to describe the broad distribution of fragment sizes often focus on the initial state, emphasizing the presence of defects in the material, and their statistical distribution. During the talk, I will rather focus on the sequence of events leading to the final shattered state. I will discuss a few experiments that focus on the direct observations of the phenomena, from the initial divergence of fragments to the formation of fragments, to highlight the physical principles involved in the obtention of the final fragment sizes. Methods of fluid dynamics, statistical physics, or chemical engineering are also useful to provide a comprehensive view of the fragmentation process.

报告人简介:

Nicolas Vandenberghe obtained his PhD in Physics from the University of Nice. He worked in Rockefeller University and the Courant Institute as a postdoc in the Applied Math Lab, developing experiments on fluid-body interactions. Since moving to IRPHE at Aix Marseille University in 2005, his main research topics have been solid fragmentation and fluid dynamics. He has been the director of the Institute of Mechanical Science and Engineering in Marseille from 2020 to 2024.

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