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# IMS-Math Mini Course

- Lecture 1: Sound waves propagating in a slightly rarefied gas I**
- Lecture 2: Sound waves propagating in a slightly rarefied gas II**
- Lecture 3: A rarefied gas flow around a rotating sphere I**
- Lecture 4: A rarefied gas flow around a rotating sphere II**

Abstract: In the present course, I will introduce our recent works [1,2] related to the analytical and numerical analyses of the linearized Boltzmann equation. In the first two classes, I will discuss the sound waves propagating in a slightly rarefied gas by the asymptotic analysis with the acoustic scaling. In the last two classes, I will discuss the time-independent behavior of a rarefied gas around a rotating sphere, which is one of the typical outer flow problems in fluid dynamics in general.

- [1] M. Hattori & S. Takata, Phys. Rev. Fluids (2019), vol 4, 103401. doi: 10.1103/PhysRevFluids.4.103401  
[2] S. Taguchi, K. Saito & S. Takata, J. Fluid Mech. (2019), vol. 862, pp. 5-33. doi:10.1017/jfm.2018.946

By

**Professor Shigeru Takata**

Kyoto University

**Lectures 1-2 : November 19, 2021 (Friday)**  
**Time : 2:30pm - 3:30pm & 3:40pm - 4:40pm**  
**Zoom Link : <https://cuhk.zoom.us/j/98819718452>**  
(Meeting ID: 988 1971 8452; Passcode: 20211119)

**Lectures 3-4 : November 26, 2021 (Friday)**  
**Time : 2:30pm - 3:30pm & 3:40pm - 4:40pm**  
**Zoom Link : <https://cuhk.zoom.us/j/97736801140>**  
(Meeting ID: 977 3680 1140; Passcode: 20211126)

*All are Welcome*