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Department of Mathematics 數學系
The Chinese University of Hong Kong 香港中文大學

Phone: (852) 3943 7988-9 • Fax: (852) 2603 5154 • Email: dept@math.cuhk.edu.hk
Rm. 220, Lady Shaw Building, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong

Kinetic Mini-Course

Topics in Kinetic Theory

by

Professor Shigeru TAKATA
Kyoto University

Abstract :
In this short course, I will introduce our works on the singular behaviour of a rarefied gas on a convex body and on kinetic modeling for phase transition. The first topic will be discussed through a study of a rarefied gas flow around a rotating sphere and the second topic will be discussed through a minimum kinetic model for the phase transition. For the second topic, the fluid-dynamic limit that leads to the Cahn-Hilliard type equation will be discussed as well.

References:
[1] S. Taguchi, K. Saito, and S. Takata, J. Fluid Mech. 862, 5-33 (2019); https://doi.org/10.1017/jfm.2018.946.
[2] S. Takata and S. Taguchi, J. Stat. Phys. 168, 1319-1352 (2017); https://doi.org/10.1007/s10955-017-1850-7.
[3] S. Takata and T. Noguchi, J. Stat. Phys. 172, 880-903 (2018); https://doi.org/10.1007/s10955-018-2068-z.
[4] S. Takata, T. Matsumoto, A. Hirahara, and M. Hattori, Phys. Rev. E 98, 052123 (2018); https://doi.org/10.1103/physRevE.98.052123.
[5] S. Takata, T. Matsumoto, and M. Hattori, Phys. Rev. E 103, 062110 (2021); https://link.aps.org/doi/10.1103/PhysRevE.103.062110

Lecture 1 and Lecture 2: A rarefied gas flow around a rotating sphere
Date: November 18, 2022 (Friday)
Time: 15:00-16:00 and 16:10-17:10 (Hong Kong SAR)
Zoom Meeting Link:
https://cuhk.zoom.us/j/97378269631?pwd=dnNhYmo5M2laaWs0UGJZdVJtTjNXdz09
Meeting ID: 973 7826 9631
Passcode: 20221118

All are Welcome