



香港中文大學
The Chinese University of Hong Kong



香港大學
THE UNIVERSITY OF HONG KONG



FIRST IN
CHANGE

Analysis and PDE Seminar

Professor Jin Woo Jang

Department of Mathematics,
Pohang University of Science and Technology

TITLE: Mathematical properties of kinetic equations with radiative transfer

Date : September 30th, 2021 (Thursday)

Time : 10am-11am (Hong Kong time)
11am-12noon (Korea time)



Link to ZOOM : <https://unist-kr.zoom.us/j/3170659442>

Meeting ID : 317 065 9442

Password : APDE21

Abstract. The goal of this talk is to discuss a class of kinetic equations describing radiative transfer in gases which include also the interaction of gas molecules with themselves. In the first part of the talk, we introduce a system of kinetic PDEs that describes the dynamics of gas molecules coupled with an equation for photons' radiative transfer. In the second part of the talk, we then discuss several scaling limits and introduce some Euler-like systems coupled with radiation as an aftermath of specific scaling limits. We consider scaling limits in which local thermal equilibrium (LTE) holds, as well as situations in which this assumption fails (non-LTE). We understand that the structure of the equations describing the gas-radiation system is very different in the LTE and non-LTE cases. We prove the existence of stationary solutions to the resulting limit models in the LTE case. Lastly, we will also prove the non-existence of stationary solutions with zero velocities in a non-LTE situation. This is a joint-work with Juan J. L. Velazquez.

All are welcome

This is a joint activity organized by Department of Mathematics, The Chinese University of Hong Kong, Hong Kong; Department of Mathematics, Institute of Mathematical Research, Research Division of Mathematical and Statistical Science, The University of Hong Kong, Hong Kong; and Department of Mathematical Sciences, Ulsan National Institute of Science and Technology, Korea. More details can be found in https://hkumath.hku.hk/~imr/event/CUHK_HKU_UNIST_Analysis_and_PDE/index.php.

