Analysis and PDE Seminar

Professor Seok-Bae Yun

Department of Mathematics,
Sung Kyun Kwan University

TITLE: Relativistic BGK model for multi-component particle system

Date :   Sept 15th, 2022 (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 fundamental equation governing the statistical distribution of relativistic rarefied particle systems is the relativistic Boltzmann equation. As in the case of the classical Boltzmann equation, BGK-type relaxational models are introduced for numerical simulation at a cheaper cost. Unlike the classical case, however, there are two different interpretations of the macroscopic variables - Eckart and Landau frames, and at least three different types of BGK models are suggested: Marle type, Anderson-Witting model, and Ruggeri-Pennisi model. However, no extension of these models to multi-component particle systems has been in the literature. In this talk, we propose a multi-component extension of the Marle model. We show that the equilibrium coefficient of our model is well defined, and the Newtonian limit leads to a well-known classical mixture BGK model. This is a joint work with Byung-Hoon Hwang and Myung-Su Lee.

All are welcome