

2016학년도 1학기

수학과 특별강연

제 목 Mathematical modeling of collective behavior

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초 록

Emergent aggregation and flocking phenomena appearing in many biological systems are simple instances of collective behavior. Recently, they have been an active research in applied mathematics, biology, engineering, and physics. In this talk, we present several different types of mathematical models describing collective behaviors from microscopic to macroscopic descriptions. In the first part, we discuss collective behavior models at kinetic and hydrodynamic levels. In the second part, we deal with the interactions between particles and fluid which can be described by kinetic-fluid equations. For those equations, we study well-posedness, hydrodynamic limit, large-time behavior, and finite-time blow-up phenomena.

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