



Department of Mathematics  
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# Lecture Series

## Scaling Limits and Effective Equations in Kinetic Theory

*Prof. Mario PULVIRENTI*  
Università di Roma "La Sapienza"

**Abstract:** Classical particle systems and statistical description. Liouville equation and hierarchy.

The paradigm of Kinetic Theory and the concept of propagation of chaos.

1. Mean-Field limit and derivation of the Vlasov equation.
2. Boltzmann equation: heuristics. Hard-sphere dynamics. Hierarchies. Derivation of the Boltzmann equation: the Lanford's result. Tree expansion and quantitative estimates.
3. Weak coupling limit. The Landau equation. Heuristics. Grazing collision limit.

### Lecture 1

Date: 29 March 2017 (Wednesday)

Time: 2:30 pm – 5:00 pm

Venue: Room 219, Lady Shaw Building, The Chinese University of Hong Kong

### Lecture 2

Date: 31 March 2017 (Friday)

Time: 2:30 pm – 5:00 pm

Venue: Room 222, Lady Shaw Building, The Chinese University of Hong Kong

### Lecture 3

Date: 3 April 2017 (Monday)

Time: 2:30 pm – 5:00 pm

Venue: Room 222, Lady Shaw Building, The Chinese University of Hong Kong

### Lecture 4

Date: 5 April 2017 (Wednesday)

Time: 2:30 pm – 5:00 pm

Venue: Room 219, Lady Shaw Building, The Chinese University of Hong Kong

*All are Welcome!*