Lanford's theorem on large classical systems (L8)

Non-Examinable (Graduate Level)

Professor J. R. Norris

Lanford's theorem establishes a rigorous derivation of Boltzmann's equation, as governing the dynamical behaviour of large systems of particles, specifically hard spheres, which at a microscopic level evolve under Newton's laws of motion. This course will present elements of the proof of this fundamental theorem, drawing on Lanford's approach and a number of subsequent clarifications and refinements.

Prerequisites

The course will assume familiarity with basic notions of analysis and integration.

Literature

1. I. Gallagher, L. Saint-Raymond and B. Texier, *From Newton to Boltzmann: hard spheres and short-range potentials*, Zurich Lectures in Advanced Mathematics, Eur. Math. Soc., Zürich, 2013

2. O. E. Lanford III, Time evolution of large classical systems, in *Dynamical systems, theory and applications (Rencontres, Battelle Res. Inst., Seattle, Wash., 1974)*, pp. 1–111, Lecture Notes in Phys., Vol. 38, Springer, Berlin-New York

Additional support

Meetings to discuss course material outside lectures will be offered on an ad hoc basis.