Ludwig Boltzmann (1844-1906)

Atoms, Irreversibility and Entropy after 100 Years
An Appraisal of Boltzmann's Ideas

Symposium at the Department of Mathematics, LMU, October 11-13, 2006

Organizers

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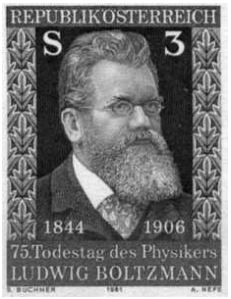

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Ludwig Boltzmann, the founder of modern atomism and of statistical reasoning in physics, was professor at the University of Munich from 1890 to 1894, where he had his own institute of theoretical physics. Having found an agreeable collection of mathematicians and physicists - the "Hofbräuhausgesellschaft" - to discuss with, he looked upon the time he spent in Munich with great satisfaction. In a letter to Felix Klein in 1898 he wrote: "Just when I received your dear letter I had another neurasthenic attack, as I often do in Vienna, although I was spared them altogether in Munich. With it came the fear that the whole H-curve was nonsense."

A hundred years after Boltzmann's death in Duino (Italy), Boltzmann's ideas remain both controversial and canonical. The purpose of this international symposium is to appraise Boltzmann's achievements by gathering approx. 60 scientists working on the foundations of statistical mechanics (mathematicians, physicists and philosophers of natural sciences) and to stimulate a discussion about the present status of Boltzmann's ideas, with reports on recent (or not so recent but important) results and perspectives for future developments. In so doing, we wish to celebrate Boltzmann's work on the atomistic explanation of the irreversible behavior of thermodynamic systems, as well as of their equilibrium properties. His ideas are - not surprisingly - as relevant to modern physics as they were in Boltzmann's days.

The topics of the three-days conference include

1. Boltzmann: Life and Science

2. The Boltzmann Equation
(microscopic derivation for classical and quantum mechanical systems of particles, properties and applications)

3. Foundations of Statistical Mechanics
(ergodicity, chaoticity, kinetic theory and dynamical systems)

4. Entropy
(Gibbs entropy versus Boltzmann entropy, black hole entropy)

5. Probability in Physics