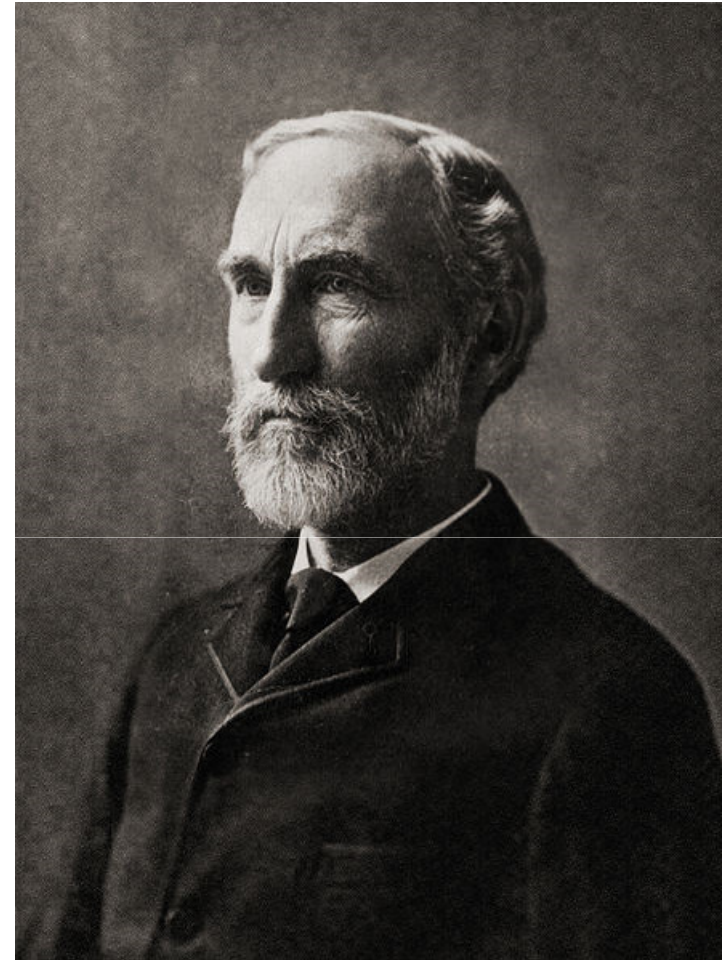


L'ensemble microcanonique

Les ensembles de Gibbs

*“We may imagine **a great number of systems** of the same nature, but differing in the configurations and velocities which they have at a given instant, and differing not merely infinitesimally, but it may be so as to embrace every conceivable combination of configuration and velocities. And here **we may set the problem, not to follow a particular system through its succession of configurations, but to determine how the whole number of systems will be distributed among the various conceivable configurations and velocities at any required time, when the distribution has been given for some one time***

*What we know about **a body** can generally be described most accurately and most simply by saying that it **is one taken at random from a great number (ensemble) of bodies which are completely described**”*



Josiah Willard Gibbs
1839-1903

Elementary principles in statistical mechanics, 1902

Ludwig Boltzmann 1844-1906



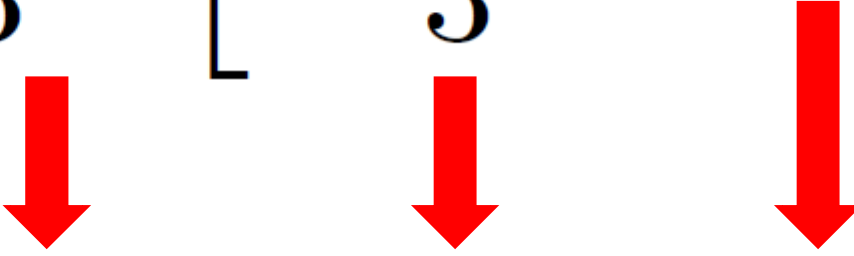
Ludwig Boltzmann 1844-1906

$$S = k_B \ln \Omega$$

même si (d'après Uffink 2006)

Boltzmann n'a pas écrit cette formule, mais :

$$\int \frac{dQ}{T} = \frac{2}{3} \Omega \left[= \frac{2}{3} \ln |\Gamma_Z| \right]$$



S **k_B** **Ω**

dans les unités
de Boltzmann

Ludwig Boltzmann 1844-1906



**Cédric Villani interviendra
pendant le cours
du 14 mars 2012**