Potential-Descending Principle and Statistical Theory of Heat[1]

SHOUHONG WANG, Indiana Univ - Bloomington, TIAN MA, Sichuan U
— The aim of this talk are two-fold. First we postulate the potential-descending principle (PDP), and to show that PDP leads to 1) the 1st and 2nd laws of thermodynamics, and 2) three classical distributions: Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac. Hence PDP serves as the first principle for statistical physics. We also show that PDP is the first principle for irreversibility for all thermodynamic systems, and the thermodynamic potential, rather than entropy, is the correct physical quantity for irreversibility. Second, we present a new theory of heat. The main results include 1) energy level formula of temperature, 2) photon number entropy formula, 3) law of temperature, and 4) thermal energy formula. The photon number entropy formula is equivalent to the Boltzmann entropy formula. But the new formula possesses new physical meaning that the physical carrier of heat is the photons.

Shouhong Wang
Indiana Univ - Bloomington

Date submitted: 15 Sep 2017   Electronic form version 1.4