Law of Distribution of Energy.

The theoretical explanation of black body radiation was done by Planck.

If the walls of hollow enclosure are maintained at a constant temperature, then the inside of enclosure are filled with the electromagnetic radiation.

The radiation coming out from a small hole in the enclosure are called black body radiation. According to Max Planck, the radiation inside the enclosure may be assumed to be produced by a number of harmonic oscillators.

A harmonic oscillator oscillating with frequency ν can possesses energies, which are integral multiples of hν. Where h is a constant, called Planck's constant. Thus the harmonic oscillator can posses energies given by $E = nh\nu$ where n is an integer.

According to Planck's law $$E_\lambda d\lambda = \frac{8\pi hc}{\lambda^5}\frac{1}{[e^{hc/\lambda KT} - 1]}d\lambda$$

This law is valid for radiations of all wavelengths ranging from zero to infinite.

For radiations of short wavelength $\left(\lambda << \frac{hc}{KT}\right)$

Planck's law reduces to Wien's energy distribution law $$E_\lambda d\lambda = \frac{A}{\lambda^5}e^{-B/\lambda T}d\lambda$$

For radiations of long wavelength $\left(\lambda >> \frac{hc}{KT}\right)$

Planck's law reduces to Rayleigh-Jeans energy distribution law $$E_\lambda d\lambda = \frac{8\pi KT}{\lambda^4}d\lambda$$