

UNITS AND FUNDAMENTAL CONSTANTS

Units

This book endeavors to maintain strict adherence to the SI System of Units. Quantities must be in SI units when inserted into the equations, and when used properly, the equations will yield values in SI units. This means, for example, that wavelengths are to be expressed in m, wave numbers in m^{-1} , intensity i'_λ in $\text{Wm}^{-3}\text{sr}^{-1}$, intensity i'_η in $\text{Wm}^{-1}\text{sr}^{-1}$, angles in radians or steradians, photon energy in J, and temperatures in K. The only exception to this rule is in gas pressure, which is sometimes expressed in atmospheres.

Fundamental Constants

Name	Symbol	Value
Planck's constant	h_P	6.62618×10^{-34} Js
Boltzmann constant	k_B	1.38066×10^{-23} JK ⁻¹
Speed of light in free space	c_o	2.997925×10^8 ms ⁻¹
Stefan-Boltzmann constant	σ	5.6702×10^{-8} Wm ⁻² K ⁻⁴

