The Planck Hypothesis

In order to explain the frequency distribution of radiation from a hot cavity (blackbody radiation) Planck proposed the ad hoc assumption that the radiant energy could exist only in discrete quanta which were proportional to the frequency. This would imply that higher modes would be less populated and avoid the ultraviolet catastrophe of the Rayleigh-Jeans Law.

$E = h\nu$ Quantum energy of a photon.

(ν: frequency of radiation, sometimes written as f giving expression E = hf.)

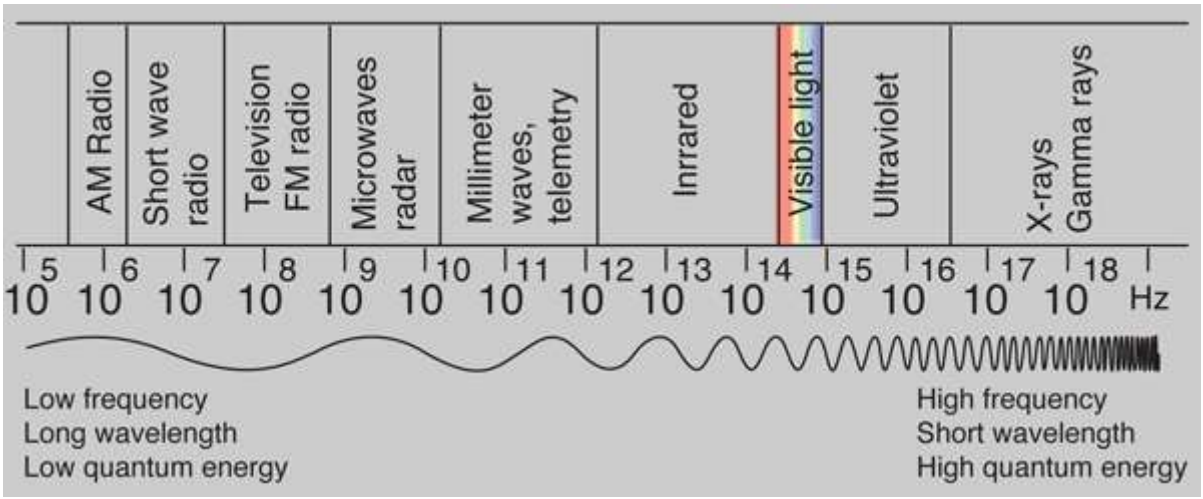
h = Planck's constant = 6.626×10^{-34} Joule·sec = 4.136×10^{-15} eV· s

The quantum idea was soon seized to explain the photoelectric effect, became part of the Bohr theory of discrete atomic spectra, and quickly became part of the foundation of modern quantum theory.

Calculation	Interaction of radiation with matter	Electromagnetic spectrum	Basic quantum processes

Are there limits on the frequency of a photon?

Photon Energies for EM Spectrum



Quantum energy hυ = hf = _____ x 10^_____ eV

Quantum energy hυ = hf = _____ eV = _____ MeV = _____ GeV

Wavelength	Frequency

Index to HyperPhysics

Close Index*

*The true address of the document is not shown when the index is open.

Google search of HyperPhysics

* acceleration
* absorption, quantum
*adhesion
*admittance
* air, constituents
* air friction
* airbag
* airfoil
* airplane in wind
* albedo
* algebra
* Alpha Centauri
* alpha particle
* alveoli of lungs
* Ampere's Law
* AM radio
* angular acceleration
* angular displacement
* angular momentum
* angular momentum, quantized
* angular velocity
* Archimedes' principle
* arctangent problem
* aspirator
* astronomical unit
* asymptotic freedom
* atmosphere, constituents
* atmospheric pressure
* atomic clock
* atomic mass unit