

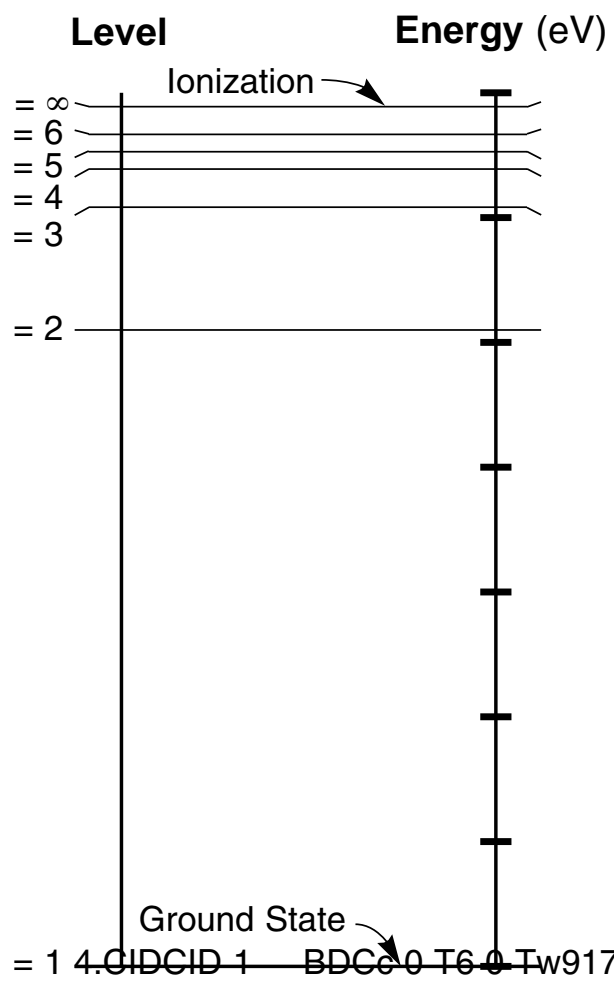
The Electromagnetic Spectrum

Wavelength in a vacuum (m)

10^{-13} 10^{-12} 10^{-11} 10^{-10} 10^{-9} 10^{-8} 10^{-7} 10^{-6} 10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^0 10^1 10^2 10^3 10^4

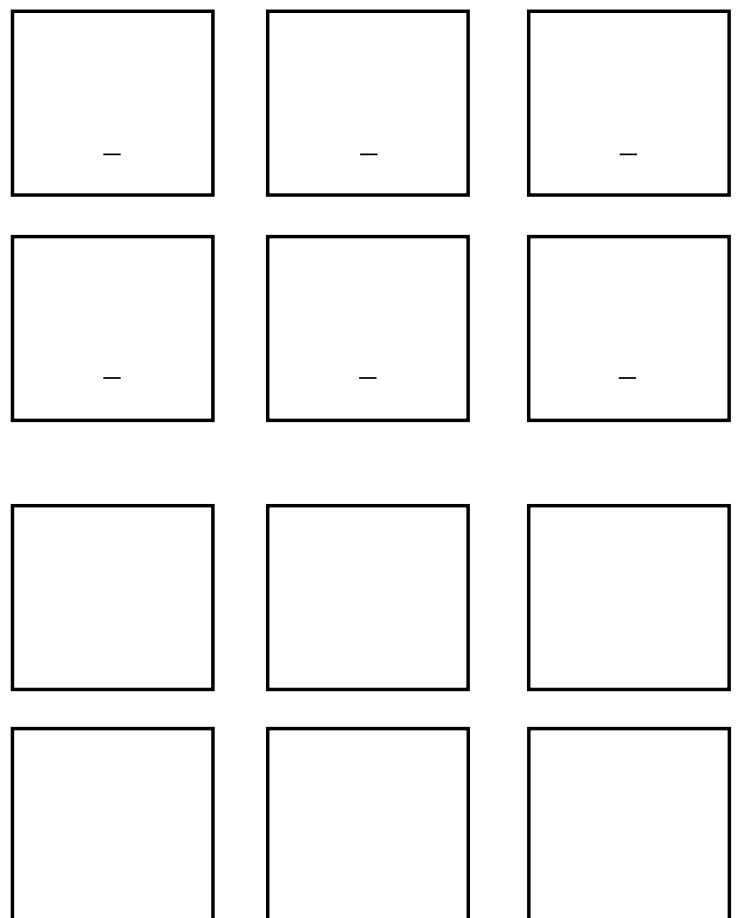
Energy Level Diagrams

Hydrogen



Level

= 1 4.C1DC1D 1 BDCc 0 T6 0 Tw917 B-ogen 4.C19CID 1 BDCc 0 T606 0 T9627 B-ogen



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Mechanics

$$a = \frac{v}{t}$$

$$= \frac{\Delta v}{\Delta t}$$

$$v = at$$

$$v = at + \frac{1}{2} at^2$$

$$v^2 = at^2 + 2at$$

$$A_x = A \sin \theta$$

$$A_y = A \cos \theta$$

$$= \frac{F}{m}$$

$$F_f = \mu F_N$$

$$F_g = \frac{G m_1 m_2}{r^2}$$

$$J = Ft$$

=

$$W = Fd$$

$$E = Fd = \Delta W$$

$$F =$$

$$E = \frac{1}{2} mv^2$$

$$F =$$

$$= \frac{2E}{v^2}$$

$$\Delta E = F \Delta d$$

$$E = \frac{1}{2} mv^2$$

$$W = Fd = \Delta E$$

$$E = E_k + E_p +$$

$$J = Ft = \frac{Ft}{m} = Fv$$

= acceleration

= centripetal acceleration

A = any vector quantity

d = displacement or distance

E = total energy

F = force

F_c = centripetal force

F_f = force of friction

F_g = weight or force due to gravity

F_N = normal force

F_net = net force

F_s = force on a spring

g = acceleration due to gravity or gravitational field strength

G = universal gravitational constant

h = height

J = impulse

k = spring constant

E_k = kinetic energy

m = mass

p = momentum

P = power

E_p = potential energy

E_s = potential energy stored in a spring

U = internal energy

r = radius or distance between centers

t = time interval

v = velocity or speed

v_avg = average velocity or average speed

W = work

ΔL = change in spring length from the equilibrium position

Δ = change

θ = angle

μ = coefficient of friction