

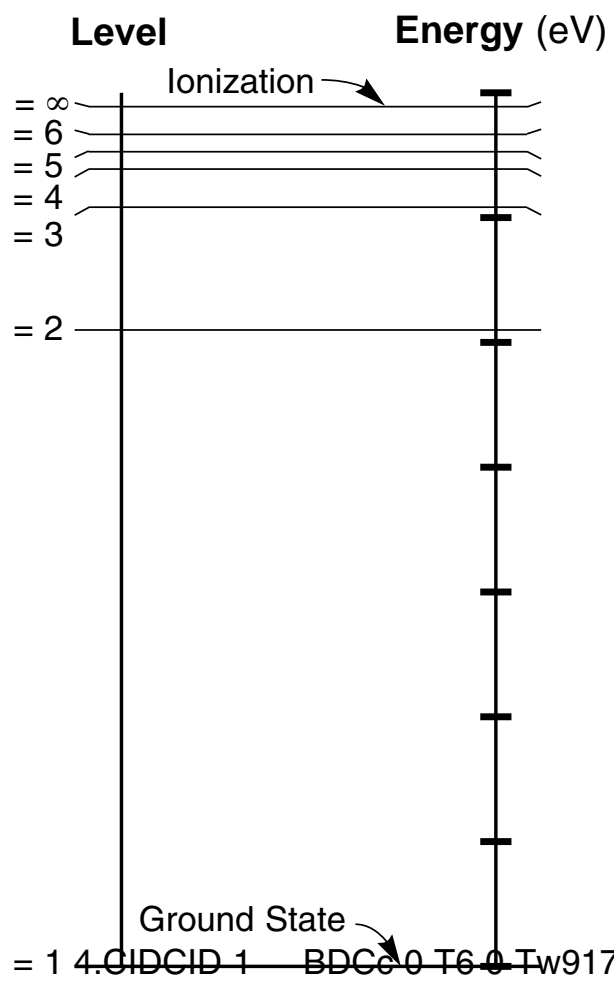
The Electromagnetic Spectrum

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

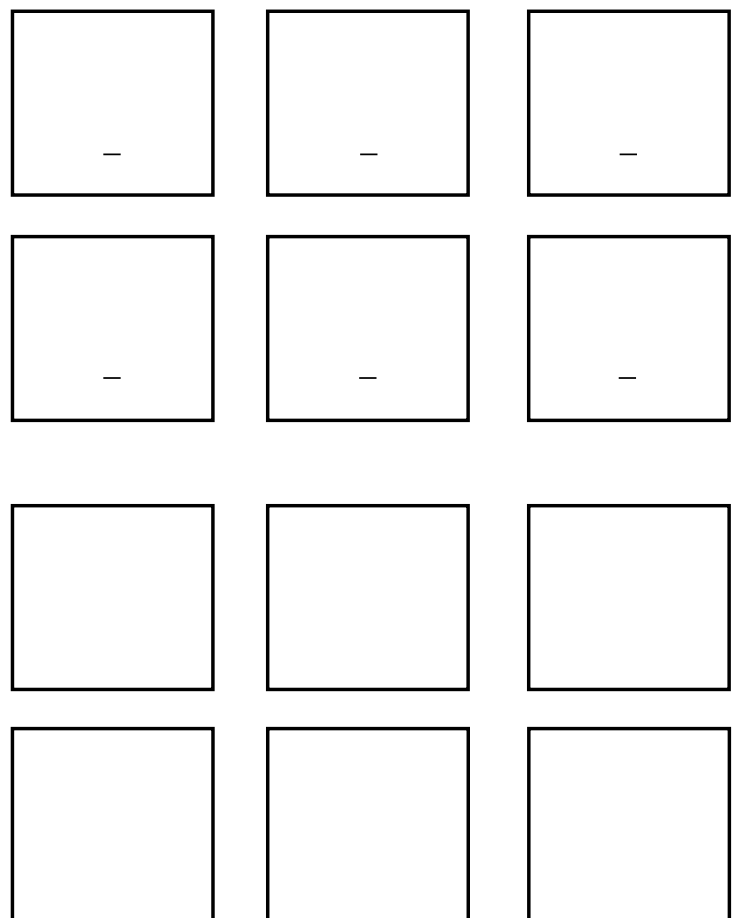
Energy Level Diagrams

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

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

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

$$v_f = v_i + at$$

$$v_f^2 = v_i^2 + 2a\Delta x$$

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$$A_y = A \sin \theta$$

$$A_x = A \cos \theta$$

$$F_f = \mu F_N$$

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

$$J = F \Delta t$$

=

$$J = F \Delta t = \Delta p$$

$$J = F \Delta t = \Delta p$$

$$F =$$

$$E = \frac{1}{2} k x^2$$

$$F =$$

$$= \frac{2E}{x}$$

$$\Delta E = F \Delta x$$

$$E = \frac{1}{2} k x^2$$

$$W = F \Delta x = \Delta E$$

$$E = E_k + E_p + E_{int}$$

$$F_f = \mu F_N = F_f$$

= acceleration

= centripetal acceleration

A = any vector quantity

x = 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

= height

J = impulse

= spring constant

E = kinetic energy

= mass

= momentum

P = power

E_p = potential energy

E_s = potential energy stored in a spring

= internal energy

r = radius or distance between centers

= time interval

= velocity or speed

v_avg = average velocity or average speed

W = work

= change in spring length from the equilibrium position

Δ = change

θ = angle

μ = coefficient of friction