

Index

A

aberration
26.6: Aberrations

absolute pressure
11.6: Gauge Pressure, Absolute Pressure, and Pressure Measurement

absolute zero
13.1: Temperature

Ac circuit
23.3: RLC Series AC Circuits

AC circuits
23.3: RLC Series AC Circuits

AC current
20.5: Alternating Current versus Direct Current

AC voltage
20.5: Alternating Current versus Direct Current

acceleration
2.4: Acceleration

Acceleration due to Gravity
2.7: Falling Objects

acceptance angle
27.6: Limits of Resolution- The Rayleigh Criterion

accommodation
26.1: Physics of the Eye

accuracy
1.3: Accuracy, Precision, and Significant Figures

acoustic impedance
17.7: Ultrasound

active transport
12.7: Molecular Transport Phenomena- Diffusion, Osmosis, and Related Processes

activity
31.5: Half-Life and Activity

adaptive optics
26.5: Telescopes

adhesive forces
11.8: Cohesion and Adhesion in Liquids - Surface Tension and Capillary Action

adiabatic process
15.2: The First Law of Thermodynamics and Some Simple Processes

air resistance
3.4: Projectile Motion

alpha decay
31.4: Nuclear Decay and Conservation Laws

alpha rays
31.1: Nuclear Radioactivity

alternating current
20.5: Alternating Current versus Direct Current

AM
24.3: The Electromagnetic Spectrum

Ampere's Law
22.9: Magnetic Fields Produced by Currents- Ampere's Law

ammeter
21.4: DC Voltmeters and Ammeters

ampere (unit)
20.1: Current

Amplitude
16.3: Simple Harmonic Motion- A Special Periodic Motion
24.2: Production of Electromagnetic Waves

amplitude modulation
24.3: The Electromagnetic Spectrum

amplitude modulation (AM)
24.3: The Electromagnetic Spectrum

analog meter
21.4: DC Voltmeters and Ammeters

analytical method
3.3: Vector Addition and Subtraction- Analytical Methods

Anger camera
32.1: Medical Imaging and Diagnostics

Angular acceleration
10.1: Angular Acceleration

angular magnification
26.5: Telescopes

Angular momentum
10.5: Angular Momentum and Its Conservation
10.7: Gyroscopic Effects- Vector Aspects of Angular Momentum

angular velocity
6.1: Rotation Angle and Angular Velocity

antimater
33.4: Particles, Patterns, and Conservation Laws

Antimatter
31.4: Nuclear Decay and Conservation Laws

antinode
16.10: Superposition and Interference
17.5: Sound Interference and Resonance- Standing Waves in Air Columns

application
4.7: Further Applications of Newton's Laws of Motion

approximation
1.4: Approximation

arc length
6.1: Rotation Angle and Angular Velocity

Archimedes' principle
11.7: Archimedes' Principle

Astigmatism
26.2: Vision Correction

atom
30.1: Discovery of the Atom

atomic excitation
30.5: Applications of Atomic Excitations and De-Excitations

atomic mass
31.3: Substructure of the Nucleus

atomic number
30.9: The Pauli Exclusion Principle
31.3: Substructure of the Nucleus

atomic spectra
29.1: Quantization of Energy

Average Acceleration
2.4: Acceleration

average speed
2.3: Time, Velocity, and Speed

Average Velocity
2.3: Time, Velocity, and Speed

Avogadro's number
13.3: The Ideal Gas Law

axions
34.4: Dark Matter and Closure

axis of a polarizing filter
27.8: Polarization

B

back emf
23.9: Back Emf

banked curve
6.3: Centripetal Force

barrier penetration
31.7: Tunneling

baryon number
33.5: Quarks - Is That All There Is?

Baryons
33.5: Quarks - Is That All There Is?

basal metabolic rate
7.8: Work, Energy, and Power in Humans

beat frequency
16.10: Superposition and Interference

becquerel
31.5: Half-Life and Activity

bel (units)
17.3: Sound Intensity and Sound Level

Bernoulli's equation
12.2: Bernoulli's Equation
12.3: The Most General Applications of Bernoulli's Equation

Bernoulli's principle
12.2: Bernoulli's Equation

Beta decay
31.4: Nuclear Decay and Conservation Laws

beta rays
31.1: Nuclear Radioactivity

Big Bang
34.1: Cosmology and Particle Physics

binding energy (BE)
31.7: Tunneling

binding energy (electron)
29.2: The Photoelectric Effect

binding energy (nuclear)
31.6: Binding Energy

binding energy per nucleon
31.6: Binding Energy

Bioelectricity
20.7: Nerve Conduction-Electrocardiograms
21: Circuits, Bioelectricity, and DC Instruments

birefringent
27.8: Polarization

black holes
34.2: General Relativity and Quantum Gravity

blackbody
29.1: Quantization of Energy

blackbody radiation
29.1: Quantization of Energy

Bohr radius
30.3: Bohr's Theory of the Hydrogen Atom

Boltzmann constant
13.3: The Ideal Gas Law

bottom quark
33.5: Quarks - Is That All There Is?

bow wake
17.4: Doppler Effect and Sonic Booms

Bragg equation
29.6: The Wave Nature of Matter

breeder reactors
32.6: Fission

breeding
32.6: Fission

bremsstrahlung

29.3: Photon Energies and the Electromagnetic Spectrum

Brewster's angle

27.8: Polarization

Brewster's law

27.8: Polarization

bridge device

21.5: Null Measurements

Brownian motion

30.1: Discovery of the Atom

buoyant force

11.7: Archimedes' Principle

C

Capacitance

19.5: Capacitors and Dielectrics

19.7: Energy Stored in Capacitors

capacitive

23.2: Reactance, Inductive and Capacitive

capacitive reactance

23.2: Reactance, Inductive and Capacitive

capacitor

19.5: Capacitors and Dielectrics

19.6: Capacitors in Series and Parallel

capacitors in parallel

19.6: Capacitors in Series and Parallel

capacitors in series

19.6: Capacitors in Series and Parallel

capillary action

11.8: Cohesion and Adhesion in Liquids - Surface Tension and Capillary Action

Carnot cycle

15.4: Carnot's Perfect Heat Engine- The Second Law of Thermodynamics Restated

Carnot efficiency

15.4: Carnot's Perfect Heat Engine- The Second Law of Thermodynamics Restated

Carnot engine

15.4: Carnot's Perfect Heat Engine- The Second Law of Thermodynamics Restated

carrier particle

4.8: Extended Topic- The Four Basic Forces—An Introduction

carrier particles

33.1: The Yukawa Particle and the Heisenberg Uncertainty Principle Revisited

carrier wave

24.3: The Electromagnetic Spectrum

Celsius scale

13.1: Temperature

center of gravity

9.2: The Second Condition for Equilibrium

Center of mass

6.5: Newton's Universal Law of Gravitation

Centrifugal force

6.4: Fictitious Forces and Non-inertial Frames - The Coriolis Force

centripetal acceleration

6.2: Centripetal Acceleration

Centripetal force

6.3: Centripetal Force

change in entropy

15.6: Entropy and the Second Law of Thermodynamics- Disorder and the Unavailability of Energy

change in momentum

8.2: Impulse

chaos

34.5: Complexity and Chaos

characteristic time constant

23.1: RL Circuits

characteristic x rays

29.3: Photon Energies and the Electromagnetic Spectrum

charm quark

33.5: Quarks - Is That All There Is?

chart of the nuclides

31.3: Substructure of the Nucleus

chemical energy

7.6: Conservation of Energy

Chromatic aberration

26.6: Aberrations

circuits

21: Circuits, Bioelectricity, and DC Instruments

classical physics

1.1: Physics- An Introduction

classical relativity

3.5: Addition of Velocities

classical velocity addition

28.4: Relativistic Addition of Velocities

coefficient of linear expansion

13.2: Thermal Expansion of Solids and Liquids

coefficient of performance

15.5: Applications of Thermodynamics- Heat Pumps and Refrigerators

coefficient of volume expansion

13.2: Thermal Expansion of Solids and Liquids

coherent

27.3: Young's Double Slit Experiment

cohesive forces

11.8: Cohesion and Adhesion in Liquids - Surface Tension and Capillary Action

colliding beams

33.3: Accelerators Create Matter from Energy

Collisions

8.6: Collisions of Point Masses in Two Dimensions

color (quark)

33.5: Quarks - Is That All There Is?

color constancy

26.3: Color and Color Vision

coma (optics)

26.6: Aberrations

Commutative

3.2: Vector Addition and Subtraction- Graphical Methods

complexity

34.5: Complexity and Chaos

component

3.2: Vector Addition and Subtraction- Graphical Methods

compound microscope

26.4: Microscopes

Compton effect

29.4: Photon Momentum

conduction

14.4: Heat Transfer Methods

14.5: Conduction

conductor

18.2: Conductors and Insulators

18.7: Conductors and Electric Fields in Static Equilibrium

confocal microscopes

27.9: Microscopy Enhanced by the Wave Characteristics of Light

Conservation laws

21.3: Kirchhoff's Rules

Conservation of angular momentum

10.5: Angular Momentum and Its Conservation

conservation of mechanical energy

7.4: Conservative Forces and Potential Energy

conservation of momentum principle

8.3: Conservation of Momentum

conservative force

7.4: Conservative Forces and Potential Energy

constant acceleration

2.5: Motion Equations for Constant Acceleration in One Dimension

constructive interference

16.10: Superposition and Interference

29.6: The Wave Nature of Matter

constructive interference for a diffraction

grating

27.4: Multiple Slit Diffraction

constructive interference for a double slit

27.3: Young's Double Slit Experiment

Contact Angle

11.8: Cohesion and Adhesion in Liquids - Surface Tension and Capillary Action

contrast

27.9: Microscopy Enhanced by the Wave Characteristics of Light

convection

14.4: Heat Transfer Methods

14.6: Convection

converging lens

25.6: Image Formation by Lenses

converging mirror

25.7: Image Formation by Mirrors

Coordinate Systems

2.2: Vectors, Scalars, and Coordinate Systems

Coriolis Force

6.4: Fictitious Forces and Non-inertial Frames - The Coriolis Force

corner reflector

25.4: Total Internal Reflection

cosmic microwave background

34.1: Cosmology and Particle Physics

cosmological constant

34.4: Dark Matter and Closure

cosmological red shift

34.1: Cosmology and Particle Physics

cosmology

34.1: Cosmology and Particle Physics

Coulomb force

18.3: Coulomb's Law

Coulomb interaction

18.6: Electric Forces in Biology

Coulomb's Law

18.3: Coulomb's Law

critical angle

25.4: Total Internal Reflection

critical damping

16.7: Damped Harmonic Motion

critical density

34.4: Dark Matter and Closure

critical mass

32.6: Fission

critical point

13.5: Phase Changes

critical pressure

13.5: Phase Changes

Critical temperature

- 13.5: Phase Changes
- 34.6: High-temperature Superconductors

criticality

- 32.6: Fission

curie

- 31.5: Half-Life and Activity

Curie temperature

- 22.2: Ferromagnets and Electromagnets

current

- 20.1: Current
- 21.1: Resistors in Series and Parallel

current sensitivity

- 21.4: DC Voltmeters and Ammeters

cyclical process

- 15.3: Introduction to the Second Law of Thermodynamics - Heat Engines and their Efficiency

Cyclotron

- 33.3: Accelerators Create Matter from Energy

D

Dalton's law of partial pressures

- 13.5: Phase Changes

dark matter

- 34.4: Dark Matter and Closure

DC circuits

- 21.6: DC Circuits Containing Resistors and Capacitors

de Broglie wavelength

- 29.6: The Wave Nature of Matter

decay constant

- 31.5: Half-Life and Activity

decay series

- 31.4: Nuclear Decay and Conservation Laws

deceleration

- 2.4: Acceleration

decibels (units)

- 17.3: Sound Intensity and Sound Level

defibrillator

- 19.7: Energy Stored in Capacitors

deformation

- 5.3: Elasticity - Stress and Strain
- 16.1: Hooke's Law - Stress and Strain Revisited

degree Celsius

- 13.1: Temperature

degree Fahrenheit

- 13.1: Temperature

density

- 11.2: Density

dependent variable

- 2.8: Graphical Analysis of One-Dimensional Motion

derived units

- 1.2: Physical Quantities and Units

destructive interference

- 16.10: Superposition and Interference

destructive interference for a double slit

- 27.3: Young's Double Slit Experiment

destructive interference for a single slit

- 27.5: Single Slit Diffraction

dew point

- 13.6: Humidity, Evaporation, and Boiling

dialysis

- 12.7: Molecular Transport Phenomena- Diffusion, Osmosis, and Related Processes

diastolic pressure

- 11.6: Gauge Pressure, Absolute Pressure, and Pressure Measurement
- 11.9: Pressures in the Body

dielectric

- 19.5: Capacitors and Dielectrics

dielectric strength

- 19.5: Capacitors and Dielectrics

diffraction

- 27.2: Huygens's Principle - Diffraction

diffraction grating

- 27.4: Multiple Slit Diffraction

diffusion

- 12.7: Molecular Transport Phenomena- Diffusion, Osmosis, and Related Processes

digital meter

- 21.4: DC Voltmeters and Ammeters

dipole

- 18.6: Electric Forces in Biology

direct current

- 20.5: Alternating Current versus Direct Current

direction

- 3.2: Vector Addition and Subtraction- Graphical Methods

direction of magnetic field lines

- 22.3: Magnetic Fields and Magnetic Field Lines

direction of polarization

- 27.8: Polarization

Dispersion

- 25.5: Dispersion - Rainbows and Prisms

displacement

- 2.1: Displacement
- 2.2: Vectors, Scalars, and Coordinate Systems

distance

- 2.1: Displacement
- 2.2: Vectors, Scalars, and Coordinate Systems

distance traveled

- 2.1: Displacement

diverging lens

- 25.6: Image Formation by Lenses

diverging mirror

- 25.7: Image Formation by Mirrors

domains

- 22.2: Ferromagnets and Electromagnets

doppler effect

- 17.4: Doppler Effect and Sonic Booms

Doppler shift

- 17.4: Doppler Effect and Sonic Booms

drag forces

- 5.2: Drag Forces

drift velocity

- 20.1: Current

dynamic equilibrium

- 9.1: The First Condition for Equilibrium

Dynamics

- 4.1: Development of Force Concept

E

ECG

- 20.7: Nerve Conduction–Electrocardiograms

eddy current

- 23.7: Eddy Currents and Magnetic Damping

efficiency

- 7.6: Conservation of Energy

elapsed time

- 2.3: Time, Velocity, and Speed

Elastic collision

- 8.4: Elastic Collisions in One Dimension

elastic collisions

- 8.6: Collisions of Point Masses in Two Dimensions

Elastic potential energy

- 16.1: Hooke's Law - Stress and Strain Revisited

Elasticity

- 5.3: Elasticity - Stress and Strain

electric charge

- 18.1: Static Electricity and Charge - Conservation of Charge

electric current

- 20.1: Current

electric energy

- 20.4: 20.4 Electric Power and Energy

electric field

- 18.4: Electric Field- Concept of a Field Revisited
- 18.5: Electric Field Lines- Multiple Charges
- 24.2: Production of Electromagnetic Waves

Electric Field Lines

- 18.5: Electric Field Lines- Multiple Charges
- 24.1: Maxwell's Equations- Electromagnetic Waves Predicted and Observed

Electric field strength

- 24.2: Production of Electromagnetic Waves

Electric generators

- 23.8: Electric Generators

electric potential

- 19.1: Electric Potential Energy- Potential Difference
- 19.3: Electrical Potential Due to a Point Charge

electric power

- 20.4: 20.4 Electric Power and Energy

electrical energy

- 7.6: Conservation of Energy

electrocardiogram

- 20.7: Nerve Conduction–Electrocardiograms

Electromagnet

- 22.2: Ferromagnets and Electromagnets

Electromagnetic force

- 18.0: Prelude to Electric Charge and Electric Field

Electromagnetic induction

- 23.4: Induced Emf and Magnetic Flux

Electromagnetic Spectrum

- 24.3: The Electromagnetic Spectrum

electromagnetic waves

- 24.1: Maxwell's Equations- Electromagnetic Waves Predicted and Observed
- 24.2: Production of Electromagnetic Waves

electromagnetism

- 22.2: Ferromagnets and Electromagnets

Electromotive force

- 21.2: Electromotive Force - Terminal Voltage
- 24.1: Maxwell's Equations- Electromagnetic Waves Predicted and Observed

electromotive force (emf)

- 21.2: Electromotive Force - Terminal Voltage
- 24.1: Maxwell's Equations- Electromagnetic Waves Predicted and Observed

Electron

- 18.1: Static Electricity and Charge - Conservation of Charge

Electron capture

- 31.4: Nuclear Decay and Conservation Laws

electron volt

- 19.1: Electric Potential Energy- Potential Difference

electrostatic equilibrium

- 18.7: Conductors and Electric Fields in Static Equilibrium

electrostatic force

- 18.3: Coulomb's Law

electrostatic precipitators

- 18.8: Applications of Electrostatics

electrostatic repulsion

18.2: Conductors and Insulators

electrostatics

18.8: Applications of Electrostatics

electroweak epoch

34.1: Cosmology and Particle Physics

elementary particle

33.5: Quarks - Is That All There Is?

ELF

24.3: The Electromagnetic Spectrum

em energy

24.4: Energy in Electromagnetic Waves

emf

21.2: Electromotive Force - Terminal Voltage

23.6: Motional Emf

24.1: Maxwell's Equations- Electromagnetic Waves Predicted and Observed

emissivity

14.7: Radiation

endoscope

25.4: Total Internal Reflection

energy

7.1: Work- The Scientific Definition

16.5: Energy and the Simple Harmonic Oscillator

energy stored in an inductor

23.12: Inductance

English units

1.2: Physical Quantities and Units

Entrainment

12.2: Bernoulli's Equation

entropy

15.6: Entropy and the Second Law of Thermodynamics- Disorder and the Unavailability of Energy

equilibrium

9.1: The First Condition for Equilibrium

9.2: The Second Condition for Equilibrium

9.6: Forces and Torques in Muscles and Joints

equipotential

19.4: Equipotential Lines

equipotential line

19.4: Equipotential Lines

Escape velocity

34.2: General Relativity and Quantum Gravity

event horizon

34.2: General Relativity and Quantum Gravity

external force

4.1: Development of Force Concept

extremely low frequency

24.3: The Electromagnetic Spectrum

extremely low frequency (ELF)

24.3: The Electromagnetic Spectrum

eye

26.1: Physics of the Eye

eyepiece

26.4: Microscopes

F

Fahrenheit scale

13.1: Temperature

falling

2.7: Falling Objects

far point

26.2: Vision Correction

farad (Units)

19.5: Capacitors and Dielectrics

Faraday cage

18.7: Conductors and Electric Fields in Static Equilibrium

Faraday's Law

23.5: Faraday's Law of Induction- Lenz's Law

Faraday's law of induction

23.5: Faraday's Law of Induction- Lenz's Law

farsightedness

26.2: Vision Correction

ferromagnetic

22.2: Ferromagnets and Electromagnets

Feynman diagram

33.2: The Four Basic Forces

fiber optics

25.4: Total Internal Reflection

fictitious force

6.4: Fictitious Forces and Non-inertial Frames - The Coriolis Force

field

18.4: Electric Field- Concept of a Field Revisited

Fine structure

30.7: Patterns in Spectra Reveal More Quantization

first law of thermodynamics

15.1: The First Law of Thermodynamics

first postulate of special relativity

28.1: Einstein's Postulates

fission

32.6: Fission

fission fragments

32.6: Fission

flat (zero curvature) universe

34.4: Dark Matter and Closure

flat universe

34.4: Dark Matter and Closure

flavor (quark)

33.5: Quarks - Is That All There Is?

flow

12.1: Flow Rate and Its Relation to Velocity

flow rate

12.1: Flow Rate and Its Relation to Velocity

fluid

11.1: What Is a Fluid?

11.4: Variation of Pressure with Depth in a Fluid

Fluids

11.1: What Is a Fluid?

11.4: Variation of Pressure with Depth in a Fluid

fluorescence

30.5: Applications of Atomic Excitations and De-Excitations

FM

24.3: The Electromagnetic Spectrum

focal length

25.6: Image Formation by Lenses

focal point

25.6: Image Formation by Lenses

food irradiation

32.4: Food Irradiation

force

4.1: Development of Force Concept

force constant

16.1: Hooke's Law - Stress and Strain Revisited

force field

4.8: Extended Topic- The Four Basic Forces—An Introduction

forced oscillations

16.8: Forced Oscillations and Resonance

forces

4.3: Newton's Second Law of Motion- Concept of a System

9.6: Forces and Torques in Muscles and Joints

fossil fuels

7.9: World Energy Use

free charge

18.7: Conductors and Electric Fields in Static Equilibrium

free electron

18.2: Conductors and Insulators

free radicals

32.4: Food Irradiation

frequency

17.2: Speed of Sound, Frequency, and Wavelength

24.2: Production of Electromagnetic Waves

frequency modulation

24.3: The Electromagnetic Spectrum

frequency modulation (FM)

24.3: The Electromagnetic Spectrum

Friction

5.1: Friction

7.5: Nonconservative Forces

fundamental

17.5: Sound Interference and Resonance- Standing Waves in Air Columns

fundamental frequency

16.10: Superposition and Interference

fundamental particle

33.5: Quarks - Is That All There Is?

fundamental units

1.2: Physical Quantities and Units

Funstable equilibrium

9.3: Stability

fusion

32.5: Fusion

G

galvanometer

21.4: DC Voltmeters and Ammeters

gamma camera

32.1: Medical Imaging and Diagnostics

Gamma decay

31.4: Nuclear Decay and Conservation Laws

gamma ray

24.3: The Electromagnetic Spectrum

29.3: Photon Energies and the Electromagnetic Spectrum

gamma rays

31.1: Nuclear Radioactivity

gauge bosons

33.4: Particles, Patterns, and Conservation Laws

Gauge Pressure

11.6: Gauge Pressure, Absolute Pressure, and Pressure Measurement

gauss

22.4: Magnetic Field Strength- Force on a Moving Charge in a Magnetic Field

Geiger tube

31.2: Radiation Detection and Detectors

general relativity

34.2: General Relativity and Quantum Gravity

generators

23.8: Electric Generators

geometric optics

25.1: The Ray Aspect of Light

glaucoma

11.9: Pressures in the Body

Gluon

33.2: The Four Basic Forces

grand unified theory

33.6: GUTs - The Unification of Forces

Graphical analysis

2.8: Graphical Analysis of One-Dimensional Motion

gravitational constant, G

6.5: Newton's Universal Law of Gravitation

gravitational lensing

34.2: General Relativity and Quantum Gravity

Gravitational potential energy

7.3: Gravitational Potential Energy

Gravitational waves

34.2: General Relativity and Quantum Gravity

gray

32.2: Biological Effects of Ionizing Radiation

gray (Gy)

32.2: Biological Effects of Ionizing Radiation

greenhouse effect

14.7: Radiation

grounded

18.8: Applications of Electrostatics

grounded.

18.2: Conductors and Insulators

grounding

19.4: Equipotential Lines

GUT epoch

34.1: Cosmology and Particle Physics

Gy

32.2: Biological Effects of Ionizing Radiation

Gyroscopes

10.7: Gyroscopic Effects- Vector Aspects of Angular Momentum

Gyroscopic effect

10.7: Gyroscopic Effects- Vector Aspects of Angular Momentum

H

hadron

33.5: Quarks - Is That All There Is?

Hall effect

22.6: The Hall Effect

Hall emf

22.6: The Hall Effect

harmonics

17.5: Sound Interference and Resonance- Standing Waves in Air Columns

head

3.2: Vector Addition and Subtraction- Graphical Methods

hearing

17.1: Sound

heat

14.1: Heat

Heat capacity

14.2: Temperature Change and Heat Capacity

heat engine

15.2: The First Law of Thermodynamics and Some Simple Processes

heat pump

15.5: Applications of Thermodynamics- Heat Pumps and Refrigerators

heat transfer

14.2: Temperature Change and Heat Capacity

Heisenberg uncertainty principle

29.7: Probability and The Heisenberg Uncertainty Principle

33.1: The Yukawa Particle and the Heisenberg Uncertainty Principle Revisited

henry

23.12: Inductance

hertz

24.1: Maxwell's Equations- Electromagnetic Waves Predicted and Observed

Hideki Yukawa

33.1: The Yukawa Particle and the Heisenberg Uncertainty Principle Revisited

high dose

32.2: Biological Effects of Ionizing Radiation

hologram

30.5: Applications of Atomic Excitations and De-Excitations

holography

30.5: Applications of Atomic Excitations and De-Excitations

Hooke's law

5.3: Elasticity - Stress and Strain

16.1: Hooke's Law - Stress and Strain Revisited

horizontally polarized

27.8: Polarization

hormesis

32.2: Biological Effects of Ionizing Radiation

horsepower

7.7: Power

Hubble constant

34.1: Cosmology and Particle Physics

hues

26.3: Color and Color Vision

human metabolism

15.1: The First Law of Thermodynamics

Huygen's principle

27.2: Huygens's Principle - Diffraction

hydrogen spectrum wavelengths

30.3: Bohr's Theory of the Hydrogen Atom

hyperopia

26.2: Vision Correction

I

ideal angle

6.3: Centripetal Force

ideal banking

6.3: Centripetal Force

Ideal gas law

13.3: The Ideal Gas Law

ideal speed

6.3: Centripetal Force

ignition

32.5: Fusion

Impulse

8.2: Impulse

incoherent

27.3: Young's Double Slit Experiment

independent variable

2.8: Graphical Analysis of One-Dimensional Motion

index of refraction

25.3: The Law of Refraction

induced emf

23.4: Induced Emf and Magnetic Flux

inductance

23.12: Inductance

induction

18.2: Conductors and Insulators

Inductive

23.2: Reactance, Inductive and Capacitive

inductive reactance

23.2: Reactance, Inductive and Capacitive

inductor

23.12: Inductance

Inelastic collision

8.5: Inelastic Collisions in One Dimension

Inertia

4.2: Newton's First Law of Motion - Inertia

inertial confinement

32.5: Fusion

inertial frame of reference

4.5: Normal, Tension, and Other Examples of Forces

28.1: Einstein's Postulates

inference microscopes

27.9: Microscopy Enhanced by the Wave Characteristics of Light

infrared radiation

24.3: The Electromagnetic Spectrum

29.3: Photon Energies and the Electromagnetic Spectrum

infrared radiation (IR)

24.3: The Electromagnetic Spectrum

infrasound

17.6: Hearing

instantaneous acceleration

2.4: Acceleration

Instantaneous velocity

2.3: Time, Velocity, and Speed

insulator

18.2: Conductors and Insulators

intensity

16.11: Energy in Waves- Intensity

17.3: Sound Intensity and Sound Level

24.4: Energy in Electromagnetic Waves

intensity reflection coefficient

17.7: Ultrasound

internal energy

15.1: The First Law of Thermodynamics

internal kinetic energy

8.4: Elastic Collisions in One Dimension

internal resistance

21.2: Electromotive Force - Terminal Voltage

intraocular pressure

11.9: Pressures in the Body

intrinsic magnetic field

30.7: Patterns in Spectra Reveal More Quantization

intrinsic spin

30.7: Patterns in Spectra Reveal More Quantization

ionizing radiation

29.3: Photon Energies and the Electromagnetic Spectrum

31.1: Nuclear Radioactivity

ionosphere

18.7: Conductors and Electric Fields in Static Equilibrium

IR

24.3: The Electromagnetic Spectrum

irreversible process

15.3: Introduction to the Second Law of Thermodynamics - Heat Engines and their Efficiency

isobaric process

15.2: The First Law of Thermodynamics and Some Simple Processes

isochoric process

15.2: The First Law of Thermodynamics and Some Simple Processes

isolated system

8.3: Conservation of Momentum

isothermal process

15.2: The First Law of Thermodynamics and Some Simple Processes

isotopes

31.3: Substructure of the Nucleus

J

joule

7.1: Work- The Scientific Definition

Joule's law

21.1: Resistors in Series and Parallel

junction rule

21.3: Kirchhoff's Rules

K

Kelvin scale

13.1: Temperature

Kepler's first law

6.6: Satellites and Kepler's Laws- An Argument for Simplicity

Kepler's Second Law

6.6: Satellites and Kepler's Laws- An Argument for Simplicity

Kepler's third law

6.6: Satellites and Kepler's Laws- An Argument for Simplicity

kilocalorie

14.1: Heat

kilogram

1.2: Physical Quantities and Units

Kinematics

2: Kinematics

2.1: Displacement

2.5: Motion Equations for Constant Acceleration in One Dimension

3.4: Projectile Motion

kinematics of rotational motion

10.2: Kinematics of Rotational Motion

Kinematics problems

2.6: Problem-Solving Basics for One-Dimensional Kinematics

kinetic energy

7.2: Kinetic Energy and the Work-Energy Theorem

Kinetic Friction

5.1: Friction

kinetic theory

13.4: Kinetic Theory- Atomic and Molecular Explanation of Pressure and Temperature

Kirchhoff's First Rule

21.3: Kirchhoff's Rules

Kirchhoff's Second Rule

21.3: Kirchhoff's Rules

Kirchhoff's junction rule

21.3: Kirchhoff's Rules

Kirchhoff's loop rule

21.3: Kirchhoff's Rules

L

laminar

12.4: Viscosity and Laminar Flow; Poiseuille's Law

laser

30.5: Applications of Atomic Excitations and De-Excitations

laser printer

18.8: Applications of Electrostatics

laser vision correction

26.2: Vision Correction

latent heat

14.3: Phase Change and Latent Heat

law

1.1: Physics- An Introduction

law of conservation of charge

18.1: Static Electricity and Charge - Conservation of Charge

law of conservation of energy

7.6: Conservation of Energy

Law of inertia

4.2: Newton's First Law of Motion - Inertia

law of reflection

25.2: The Law of Reflection

25.7: Image Formation by Mirrors

Length contraction

28.3: Length Contraction

Lenz's Law

23.5: Faraday's Law of Induction- Lenz's Law

LIGO

34.2: General Relativity and Quantum Gravity

linear accelerator

33.3: Accelerators Create Matter from Energy

linear hypothesis

32.2: Biological Effects of Ionizing Radiation

Linear momentum

8.1: Linear Momentum and Force

liquid drop model

32.6: Fission

liter

12.1: Flow Rate and Its Relation to Velocity

longitudinal wave

16.9: Waves

loop rule

21.3: Kirchhoff's Rules

Lorentz force

22.4: Magnetic Field Strength- Force on a Moving Charge in a Magnetic Field

22.5: Force on a Moving Charge in a Magnetic Field- Examples and Applications

loudness

17.6: Hearing

low dose

32.2: Biological Effects of Ionizing Radiation

M

machines

9.5: Simple Machines

MACHOs

34.4: Dark Matter and Closure

macrostate

15.7: Statistical Interpretation of Entropy and the Second Law of Thermodynamics- The Underlying Explanation

magic numbers

31.3: Substructure of the Nucleus

magnetic confinement

32.5: Fusion

magnetic damping

23.7: Eddy Currents and Magnetic Damping

magnetic field

22.3: Magnetic Fields and Magnetic Field Lines

22.5: Force on a Moving Charge in a Magnetic Field- Examples and Applications

24.2: Production of Electromagnetic Waves

magnetic field lines

22.3: Magnetic Fields and Magnetic Field Lines

24.1: Maxwell's Equations- Electromagnetic Waves Predicted and Observed

Magnetic field strength

22.9: Magnetic Fields Produced by Currents- Ampere's Law

24.2: Production of Electromagnetic Waves

magnetic field strength at the center of a circular loop

22.9: Magnetic Fields Produced by Currents- Ampere's Law

magnetic field strength inside a solenoid

22.9: Magnetic Fields Produced by Currents- Ampere's Law

magnetic flux

23.4: Induced Emf and Magnetic Flux

Magnetic force

22.4: Magnetic Field Strength- Force on a Moving Charge in a Magnetic Field

22.5: Force on a Moving Charge in a Magnetic Field- Examples and Applications

22.7: Magnetic Force on a Current-Carrying Conductor

22.10: Magnetic Force between Two Parallel Conductors

magnetic monopoles

22.2: Ferromagnets and Electromagnets

magnetic pole

22.1: Magnets

magnetic resonance imaging

22.11: More Applications of Magnetism

magnetism

22: Magnetism

magnetized

22.2: Ferromagnets and Electromagnets

magnetocardiogram

22.11: More Applications of Magnetism

magnetoencephalogram

22.11: More Applications of Magnetism

Magnification

25.6: Image Formation by Lenses

Magnitude

3.2: Vector Addition and Subtraction- Graphical Methods

Malus's law

27.8: Polarization

mass

4.2: Newton's First Law of Motion - Inertia

mass defect

31.6: Binding Energy

mass number

31.3: Substructure of the Nucleus

matter

29.6: The Wave Nature of Matter

30.6: The Wave Nature of Matter Causes Quantization

maximum field strength

24.4: Energy in Electromagnetic Waves

Maxwell's equaionts

24.1: Maxwell's Equations- Electromagnetic Waves Predicted and Observed

Maxwell's equations

22.9: Magnetic Fields Produced by Currents- Ampere's Law

MCG

22.11: More Applications of Magnetism

mechanical advantage

9.5: Simple Machines

mechanical energy

- 7.4: Conservative Forces and Potential Energy
- 19.1: Electric Potential Energy- Potential Difference

mechanical equivalent of heat

- 14.1: Heat

MEG

- 22.11: More Applications of Magnetism

meson

- 33.1: The Yukawa Particle and the Heisenberg Uncertainty Principle Revisited

mesons

- 33.5: Quarks - Is That All There Is?

metabolic rate

- 7.8: Work, Energy, and Power in Humans

metastable

- 30.5: Applications of Atomic Excitations and De-Excitations

Meter

- 1.2: Physical Quantities and Units
- 22.8: Torque on a Current Loop - Motors and Meters

method of adding percents

- 1.3: Accuracy, Precision, and Significant Figures

metric system

- 1.2: Physical Quantities and Units

microgravity

- 6.5: Newton's Universal Law of Gravitation

microlensing

- 34.4: Dark Matter and Closure

microshock sensitive

- 20.6: Electric Hazards and the Human Body

microstate

- 15.7: Statistical Interpretation of Entropy and the Second Law of Thermodynamics- The Underlying Explanation

microwaves

- 24.3: The Electromagnetic Spectrum
- 29.3: Photon Energies and the Electromagnetic Spectrum

micturition reflex

- 11.9: Pressures in the Body

mirror

- 25.2: The Law of Reflection

model

- 1.1: Physics- An Introduction
- 2.3: Time, Velocity, and Speed

moderate dose

- 32.2: Biological Effects of Ionizing Radiation

modern physics

- 1.1: Physics- An Introduction

mole

- 13.3: The Ideal Gas Law

Moments of Inertia

- 10.3: Dynamics of Rotational Motion - Rotational Inertia

momentum

- 8.6: Collisions of Point Masses in Two Dimensions

monopoles

- 22.2: Ferromagnets and Electromagnets

motational emf

- 23.6: Motional Emf

motion

- 3.4: Projectile Motion

motor

- 22.8: Torque on a Current Loop - Motors and Meters

moving charge

- 22.5: Force on a Moving Charge in a Magnetic Field- Examples and Applications

MRI

- 22.11: More Applications of Magnetism

Multiple Slit Diffraction

- 27.4: Multiple Slit Diffraction

muscles

- 9.6: Forces and Torques in Muscles and Joints

mutual inductance

- 23.12: Inductance

myopia

- 26.2: Vision Correction

N

natural frequency

- 16.8: Forced Oscillations and Resonance

near point

- 26.2: Vision Correction

nearsightedness

- 26.2: Vision Correction

negatively curved

- 34.4: Dark Matter and Closure

nerve conduction

- 20.7: Nerve Conduction-Electrocardiograms

net work

- 7.2: Kinetic Energy and the Work-Energy Theorem

neutral equilibrium

- 9.3: Stability

neutralinos

- 34.4: Dark Matter and Closure

neutrino

- 31.4: Nuclear Decay and Conservation Laws

neutrino oscillations

- 34.4: Dark Matter and Closure

neutron

- 31.3: Substructure of the Nucleus

neutron stars

- 34.2: General Relativity and Quantum Gravity

Newton's third law of motion

- 4.4: Newton's Third Law of Motion- Symmetry in Forces

Newton's Universal Law of Gravitation

- 6.5: Newton's Universal Law of Gravitation

newton's laws

- 4.7: Further Applications of Newton's Laws of Motion

Newton's rings

- 27.7: Thin Film Interference

NMR

- 22.11: More Applications of Magnetism

node

- 17.5: Sound Interference and Resonance- Standing Waves in Air Columns

nodes

- 16.10: Superposition and Interference

nonconservative force

- 7.5: Nonconservative Forces

normal force

- 4.5: Normal, Tension, and Other Examples of Forces

north magnetic pole

- 22.1: Magnets

note

- 17.6: Hearing

nuclear energy

- 7.6: Conservation of Energy

nuclear fission

- 32.6: Fission

nuclear fusion

- 32.5: Fusion

nuclear magnetic resonance

- 22.11: More Applications of Magnetism

nuclear radiation

- 31.1: Nuclear Radioactivity

nucleons

- 31.3: Substructure of the Nucleus

nucleus

- 31.3: Substructure of the Nucleus

nuclide

- 31.3: Substructure of the Nucleus

null measurements

- 21.5: Null Measurements

numerical aperture

- 26.4: Microscopes
- 27.6: Limits of Resolution- The Rayleigh Criterion

O

objective lens

- 26.4: Microscopes

ohm

- 20.2: Ohm's Law - Resistance and Simple Circuits

Ohm's law

- 20: Electric Current, Resistance, and Ohm's Law
- 20.2: Ohm's Law - Resistance and Simple Circuits
- 21.1: Resistors in Series and Parallel

ohmic

- 20.2: Ohm's Law - Resistance and Simple Circuits

ohmmeter

- 21.5: Null Measurements

optically active

- 27.8: Polarization

orbital angular momentum

- 30.7: Patterns in Spectra Reveal More Quantization

orbital magnetic field

- 30.7: Patterns in Spectra Reveal More Quantization

order

- 27.3: Young's Double Slit Experiment

order of magnitude

- 1.2: Physical Quantities and Units

oscillate

- 24.2: Production of Electromagnetic Waves

osmosis

- 12.7: Molecular Transport Phenomena- Diffusion, Osmosis, and Related Processes

osmotic pressure

- 12.7: Molecular Transport Phenomena- Diffusion, Osmosis, and Related Processes

Otto cycle

- 15.3: Introduction to the Second Law of Thermodynamics - Heat Engines and their Efficiency

over damping

- 16.7: Damped Harmonic Motion

overtones

- 16.10: Superposition and Interference
- 17.5: Sound Interference and Resonance- Standing Waves in Air Columns

P

parallel

- 19.6: Capacitors in Series and Parallel
- 21.1: Resistors in Series and Parallel

parallel conductors

- 22.10: Magnetic Force between Two Parallel Conductors

Parallel Plate Capacitor

- 19.5: Capacitors and Dielectrics

partial pressure

- 13.5: Phase Changes

Particle physics

- 33.0: Prelude to Particle Physics

Pascal's Principle

11.5: Pascal's Principle

Pauli exclusion principle

30.9: The Pauli Exclusion Principle

percent relative humidity

13.6: Humidity, Evaporation, and Boiling

percent uncertainty

1.3: Accuracy, Precision, and Significant Figures

perfectly inelastic collision

8.5: Inelastic Collisions in One Dimension

period

16.2: Period and Frequency in Oscillations

periodic motion

16.2: Period and Frequency in Oscillations

permeability of free space

22.9: Magnetic Fields Produced by Currents-
Ampere's Law

perpendicular lever arm

9.2: The Second Condition for Equilibrium

PET

32.1: Medical Imaging and Diagnostics

phase change

14.3: Phase Change and Latent Heat

14.6: Convection

phase diagram

13.5: Phase Changes

phon (unit)

17.6: Hearing

phosphorescence

30.5: Applications of Atomic Excitations and De-
Excitations

photoconductor

18.8: Applications of Electrostatics

Photoelectric effect

29.2: The Photoelectric Effect

photomultiplier

31.2: Radiation Detection and Detectors

Photon

29.2: The Photoelectric Effect

photon energy

29.2: The Photoelectric Effect

photon momentum

29.4: Photon Momentum

physical quantity

1.2: Physical Quantities and Units

physics

1.1: Physics- An Introduction

pion

33.1: The Yukawa Particle and the Heisenberg
Uncertainty Principle Revisited

pit

6.1: Rotation Angle and Angular Velocity

pitch

17.2: Speed of Sound, Frequency, and Wavelength

Planck's constant

29.1: Quantization of Energy

planetary model of the atom

30.2: Discovery of the Parts of the Atom - Electrons
and Nuclei

planetary motion

6.6: Satellites and Kepler's Laws- An Argument for
Simplicity

point charge

18.4: Electric Field- Concept of a Field Revisited

19.3: Electrical Potential Due to a Point Charge

Poiseuille's law

12.4: Viscosity and Laminar Flow; Poiseuille's Law

Poiseuille's law for resistance

12.4: Viscosity and Laminar Flow; Poiseuille's Law

polar molecule

18.6: Electric Forces in Biology

19.5: Capacitors and Dielectrics

polarization

18.2: Conductors and Insulators

27.8: Polarization

polarization microscope

27.9: Microscopy Enhanced by the Wave
Characteristics of Light

polarized

18.7: Conductors and Electric Fields in Static
Equilibrium

27.8: Polarization

population inversion

30.5: Applications of Atomic Excitations and De-
Excitations

position

2.1: Displacement

positively curved

34.4: Dark Matter and Closure

positron

31.4: Nuclear Decay and Conservation Laws

positron emission tomography (PET)

32.1: Medical Imaging and Diagnostics

potential difference

19.1: Electric Potential Energy- Potential Difference

21.2: Electromotive Force - Terminal Voltage

potential energy

7.4: Conservative Forces and Potential Energy

potential energy of a spring

7.4: Conservative Forces and Potential Energy

potentiometer

21.5: Null Measurements

power

7.7: Power

25.6: Image Formation by Lenses

precision

1.3: Accuracy, Precision, and Significant Figures

presbyopia

26.1: Physics of the Eye

Pressure

11.3: Pressure

11.4: Variation of Pressure with Depth in a Fluid

probability distribution

29.7: Probability and The Heisenberg Uncertainty
Principle

problem solving

4.6: Problem-Solving Strategies

9.4: Applications of Statics, Including Problem-
Solving Strategies

projectile

3.4: Projectile Motion

Projectile motion

3.4: Projectile Motion

proper length

28.3: Length Contraction

proper time

28.2: Simultaneity and Time Dilation

proton

18.1: Static Electricity and Charge - Conservation of
Charge

protons

31.3: Substructure of the Nucleus

PV diagram

13.5: Phase Changes

Q

quality factor

32.2: Biological Effects of Ionizing Radiation

Quantization

30.6: The Wave Nature of Matter Causes
Quantization

quantum chromodynamics (QCD)

33.5: Quarks - Is That All There Is?

quantum electrodynamics (QED)

33.2: The Four Basic Forces

quantum gravity

34.2: General Relativity and Quantum Gravity

quantum mechanical tunneling

31.7: Tunneling

Quantum Number

30.8: Quantum Numbers and Rules

Quantum rules

30.8: Quantum Numbers and Rules

quark confinement

33.5: Quarks - Is That All There Is?

Quarks

8.3: Conservation of Momentum

33.5: Quarks - Is That All There Is?

quasars

34.2: General Relativity and Quantum Gravity

questions

34.7: Some Questions We Know to Ask

R

R factor

14.5: Conduction

rad

32.2: Biological Effects of Ionizing Radiation

radar

24.3: The Electromagnetic Spectrum

Radians

6.1: Rotation Angle and Angular Velocity

radiant energy

7.6: Conservation of Energy

radiation

14.4: Heat Transfer Methods

14.7: Radiation

radiation detector

31.2: Radiation Detection and Detectors

radio waves

24.3: The Electromagnetic Spectrum

radioactive

31.1: Nuclear Radioactivity

radioactive dating

31.5: Half-Life and Activity

Radioactivity

31.1: Nuclear Radioactivity

radiolytic products

32.4: Food Irradiation

radiopharmaceutical

32.1: Medical Imaging and Diagnostics

radiotherapy

32.3: Therapeutic Uses of Ionizing Radiation

radius of a nucleus

31.3: Substructure of the Nucleus

radius of curvature

6.1: Rotation Angle and Angular Velocity

rainbow

25.5: Dispersion - Rainbows and Prisms

range

3.4: Projectile Motion

range of radiation
31.1: Nuclear Radioactivity
rate of conductive heat transfer
14.5: Conduction
rate of decay
31.5: Half-Life and Activity
ray
25.1: The Ray Aspect of Light
Rayleigh criterion
27.6: Limits of Resolution- The Rayleigh Criterion
RBE
32.2: Biological Effects of Ionizing Radiation
RC circuit
21.6: DC Circuits Containing Resistors and Capacitors
RC circuits
21.6: DC Circuits Containing Resistors and Capacitors
Reactance
23.2: Reactance, Inductive and Capacitive
real image
25.6: Image Formation by Lenses
reflected light that is completely polarized
27.8: Polarization
refraction
25.3: The Law of Refraction
relative biological effectiveness
32.2: Biological Effects of Ionizing Radiation
relative biological effectiveness (RBE)
32.2: Biological Effects of Ionizing Radiation
relative humidity
13.6: Humidity, Evaporation, and Boiling
relative osmotic pressure
12.7: Molecular Transport Phenomena- Diffusion, Osmosis, and Related Processes
relative velocity
3.5: Addition of Velocities
relativistic Doppler effects
28.4: Relativistic Addition of Velocities
relativistic kinetic energy
28.6: Relativistic Energy
relativistic momentum
28.5: Relativistic Momentum
relativistic velocity addition
28.4: Relativistic Addition of Velocities
relativity
1.1: Physics- An Introduction
3.5: Addition of Velocities
28.0: Prelude to Special Relativity
28.1: Einstein's Postulates
rem
32.2: Biological Effects of Ionizing Radiation
renewable forms of energy
7.9: World Energy Use
resistivity
20.3: Resistance and Resistivity
resistance
20.2: Ohm's Law - Resistance and Simple Circuits
20.3: Resistance and Resistivity
21.1: Resistors in Series and Parallel
Resistor
21.1: Resistors in Series and Parallel
Resistors in Parallel
21.1: Resistors in Series and Parallel
resistors in series
21.1: Resistors in Series and Parallel
resonance
16.8: Forced Oscillations and Resonance

resonant
24.2: Production of Electromagnetic Waves
resonate
16.8: Forced Oscillations and Resonance
rest energy
28.6: Relativistic Energy
rest mass
28.5: Relativistic Momentum
restoring force
16.1: Hooke's Law - Stress and Strain Revisited
resultant
3.2: Vector Addition and Subtraction- Graphical Methods
resultant vector
3.2: Vector Addition and Subtraction- Graphical Methods
retinex
26.3: Color and Color Vision
retinex theory of color vision
26.3: Color and Color Vision
reverse dialysis
12.7: Molecular Transport Phenomena- Diffusion, Osmosis, and Related Processes
reverse osmosis
12.7: Molecular Transport Phenomena- Diffusion, Osmosis, and Related Processes
reversible process
15.2: The First Law of Thermodynamics and Some Simple Processes
Reynolds Number
12.5: The Onset of Turbulence
12.6: Motion of an Object in a Viscous Fluid
right hand rule
22.4: Magnetic Field Strength- Force on a Moving Charge in a Magnetic Field
22.9: Magnetic Fields Produced by Currents- Ampere's Law
RL circuits
23.1: RL Circuits
RLC circuit
24.1: Maxwell's Equations- Electromagnetic Waves Predicted and Observed
RLC series
23.3: RLC Series AC Circuits
rms current
20.5: Alternating Current versus Direct Current
rms voltage
20.5: Alternating Current versus Direct Current
rocket propulsion
8.7: Introduction to Rocket Propulsion
rocket science
8.7: Introduction to Rocket Propulsion
rockets
8.7: Introduction to Rocket Propulsion
rods and cones
26.3: Color and Color Vision
roentgen equivalent man (rem)
32.2: Biological Effects of Ionizing Radiation
rotation angle
6.1: Rotation Angle and Angular Velocity
Rotational Inertia
10.3: Dynamics of Rotational Motion - Rotational Inertia
rotational kinetic energy
10.4: Rotational Kinetic Energy - Work and Energy Revisited
Rydberg constant
30.3: Bohr's Theory of the Hydrogen Atom

S
satellites
6.6: Satellites and Kepler's Laws- An Argument for Simplicity
saturation
13.6: Humidity, Evaporation, and Boiling
Scalar
2.2: Vectors, Scalars, and Coordinate Systems
3.2: Vector Addition and Subtraction- Graphical Methods
19.2: Electric Potential in a Uniform Electric Field
scanning electron microscope
29.6: The Wave Nature of Matter
Schwarzschild radius
34.2: General Relativity and Quantum Gravity
scientific method
1.1: Physics- An Introduction
scintillators
31.2: Radiation Detection and Detectors
screening
18.6: Electric Forces in Biology
second
1.2: Physical Quantities and Units
Second Law of Motion
8.1: Linear Momentum and Force
second law of thermodynamics
15.3: Introduction to the Second Law of Thermodynamics - Heat Engines and their Efficiency
second law of thermodynamics stated in terms of entropy
15.6: Entropy and the Second Law of Thermodynamics- Disorder and the Unavailability of Energy
second postulate of special relativity
28.1: Einstein's Postulates
semipermeable
12.7: Molecular Transport Phenomena- Diffusion, Osmosis, and Related Processes
20.7: Nerve Conduction-Electrocardiograms
Series
19.6: Capacitors in Series and Parallel
21.1: Resistors in Series and Parallel
shear deformation
5.3: Elasticity - Stress and Strain
shell
30.9: The Pauli Exclusion Principle
shock hazard
20.6: Electric Hazards and the Human Body
23.11: Electrical Safety - Systems and Devices
short circuit
20.6: Electric Hazards and the Human Body
Shunt resistance
21.4: DC Voltmeters and Ammeters
SI Units
1.2: Physical Quantities and Units
SI units of torque
9.2: The Second Condition for Equilibrium
sievert
32.2: Biological Effects of Ionizing Radiation
significant figures
1.3: Accuracy, Precision, and Significant Figures
simple circuit
20.2: Ohm's Law - Resistance and Simple Circuits
Simple harmonic motion
16.3: Simple Harmonic Motion- A Special Periodic Motion
16.6: Uniform Circular Motion and Simple Harmonic Motion

simple harmonic oscillator

16.3: Simple Harmonic Motion- A Special Periodic Motion

16.5: Energy and the Simple Harmonic Oscillator

simple pendulum

16.4: The Simple Pendulum

simplified theory of color vision

26.3: Color and Color Vision

simultaneity

28.2: Simultaneity and Time Dilation

Single Slit Diffraction

27.5: Single Slit Diffraction

slope

2.8: Graphical Analysis of One-Dimensional Motion

Snell's law of refraction

25.3: The Law of Refraction

solenoid

22.9: Magnetic Fields Produced by Currents- Ampere's Law

sonic boom

17.4: Doppler Effect and Sonic Booms

sound

17.1: Sound

sound intensity level

17.3: Sound Intensity and Sound Level

sound pressure level

17.3: Sound Intensity and Sound Level

south magnetic pole

22.1: Magnets

space quantization

30.7: Patterns in Spectra Reveal More Quantization

Special relativity

28.1: Einstein's Postulates

Specific gravity

11.7: Archimedes' Principle

SPECT

32.1: Medical Imaging and Diagnostics

Speed of light

24.1: Maxwell's Equations- Electromagnetic Waves Predicted and Observed

Speed of Sound

17.2: Speed of Sound, Frequency, and Wavelength

spherical aberration

26.6: Aberrations

spontaneous symmetry breaking

34.1: Cosmology and Particle Physics

stability

9.3: Stability

stable equilibrium

9.3: Stability

standing wave

24.2: Production of Electromagnetic Waves

static electricity

18.0: Prelude to Electric Charge and Electric Field

Static Equilibrium

9.1: The First Condition for Equilibrium

9.4: Applications of Statics, Including Problem-Solving Strategies

statistical analysis

15.7: Statistical Interpretation of Entropy and the Second Law of Thermodynamics- The Underlying Explanation

stimulated emission

30.5: Applications of Atomic Excitations and De-Excitations

Strain

5.3: Elasticity - Stress and Strain

strangeness

33.5: Quarks - Is That All There Is?

stress

5.3: Elasticity - Stress and Strain

sublimation

13.5: Phase Changes

subshell

30.9: The Pauli Exclusion Principle

superconductors

34.6: High-temperature Superconductors

supercriticality

32.6: Fission

superforce

34.1: Cosmology and Particle Physics

superposition

16.10: Superposition and Interference

superstring

34.3: Superstrings

Superstring theory

34.3: Superstrings

surface tension

11.8: Cohesion and Adhesion in Liquids - Surface Tension and Capillary Action

synchrotron radiation

33.3: Accelerators Create Matter from Energy

system

4.3: Newton's Second Law of Motion- Concept of a System

systolic pressure

11.6: Gauge Pressure, Absolute Pressure, and Pressure Measurement

11.9: Pressures in the Body

T

tagged

32.1: Medical Imaging and Diagnostics

tail

3.2: Vector Addition and Subtraction- Graphical Methods

Telescopes

26.5: Telescopes

Temperature

13.1: Temperature

temperature change

14.2: Temperature Change and Heat Capacity

Tensile strength

5.3: Elasticity - Stress and Strain

tension

4.5: Normal, Tension, and Other Examples of Forces

terminal speed

12.6: Motion of an Object in a Viscous Fluid

Terminal velocity

5.2: Drag Forces

terminal voltage

21.2: Electromotive Force - Terminal Voltage

tesla

22.4: Magnetic Field Strength- Force on a Moving Charge in a Magnetic Field

test charge

18.4: Electric Field- Concept of a Field Revisited

theory

1.1: Physics- An Introduction

Theory of Everything (TOE)

34.2: General Relativity and Quantum Gravity

34.3: Superstrings

theory of gases

13.4: Kinetic Theory- Atomic and Molecular Explanation of Pressure and Temperature

therapeutic ratio

32.3: Therapeutic Uses of Ionizing Radiation

thermal agitation

24.3: The Electromagnetic Spectrum

thermal energy

7.6: Conservation of Energy

thermal equilibrium

13.1: Temperature

thermal expansion

13.2: Thermal Expansion of Solids and Liquids

thermal hazard

20.6: Electric Hazards and the Human Body

23.11: Electrical Safety - Systems and Devices

thermal stress

13.2: Thermal Expansion of Solids and Liquids

thin film interference

27.7: Thin Film Interference

thought experiment

34.2: General Relativity and Quantum Gravity

thrust

4.4: Newton's Third Law of Motion- Symmetry in Forces

timbre

17.6: Hearing

time

2.3: Time, Velocity, and Speed

Time dilation

28.2: Simultaneity and Time Dilation

TOE epoch

34.1: Cosmology and Particle Physics

top quark

33.5: Quarks - Is That All There Is?

Torque

9.2: The Second Condition for Equilibrium

22.8: Torque on a Current Loop - Motors and Meters

torques

9.6: Forces and Torques in Muscles and Joints

Torricelli's theorem

12.3: The Most General Applications of Bernoulli's Equation

total energy

28.6: Relativistic Energy

Total internal reflection

25.4: Total Internal Reflection

trajectory

3.4: Projectile Motion

Transformer

23.10: Transformers

transformer equation

23.10: Transformers

transmission electron microscope

29.6: The Wave Nature of Matter

transverse wave

16.9: Waves

24.2: Production of Electromagnetic Waves

triple point

13.5: Phase Changes

tunneling

31.7: Tunneling

turbulence

12.4: Viscosity and Laminar Flow; Poiseuille's Law

12.5: The Onset of Turbulence

TV

24.3: The Electromagnetic Spectrum

twin paradox

28.2: Simultaneity and Time Dilation

U

UHF

24.3: The Electromagnetic Spectrum

ultracentrifuge

6.2: Centripetal Acceleration

Ultrasound

17.6: Hearing

17.7: Ultrasound

ultraviolet microscope

27.9: Microscopy Enhanced by the Wave Characteristics of Light

ultraviolet radiation

24.3: The Electromagnetic Spectrum
29.3: Photon Energies and the Electromagnetic Spectrum

ultraviolet radiation (UV)

24.3: The Electromagnetic Spectrum

uncertainty

29.7: Probability and The Heisenberg Uncertainty Principle

uncertainty in energy

29.7: Probability and The Heisenberg Uncertainty Principle

uncertainty in momentum

29.7: Probability and The Heisenberg Uncertainty Principle

uncertainty in position

29.7: Probability and The Heisenberg Uncertainty Principle

uncertainty in time

29.7: Probability and The Heisenberg Uncertainty Principle

under damping

16.7: Damped Harmonic Motion

Uniform Circular Motion

16.6: Uniform Circular Motion and Simple Harmonic Motion

Uniform Electric Field

19.2: Electric Potential in a Uniform Electric Field

units

1.2: Physical Quantities and Units

unpolarized

27.8: Polarization

useful work

7.8: Work, Energy, and Power in Humans

UV

24.3: The Electromagnetic Spectrum
29.3: Photon Energies and the Electromagnetic Spectrum

UV microscope

27.9: Microscopy Enhanced by the Wave Characteristics of Light

V

Van de Graaff generator

18.8: Applications of Electrostatics

33.3: Accelerators Create Matter from Energy

vapor

13.5: Phase Changes

vapor pressure

13.5: Phase Changes

vector

2.2: Vectors, Scalars, and Coordinate Systems
3.1: Kinematics in Two Dimensions - An Introduction
3.2: Vector Addition and Subtraction- Graphical Methods
18.5: Electric Field Lines- Multiple Charges
19.2: Electric Potential in a Uniform Electric Field

Vector Addition

3.3: Vector Addition and Subtraction- Analytical Methods

3.5: Addition of Velocities

18.5: Electric Field Lines- Multiple Charges

Vector subtraction

3.3: Vector Addition and Subtraction- Analytical Methods

velocity

3.5: Addition of Velocities

vertically polarized

27.8: Polarization

very high frequency

24.3: The Electromagnetic Spectrum

very high frequency (VHF)

24.3: The Electromagnetic Spectrum

VHF

24.3: The Electromagnetic Spectrum

virtual image

25.6: Image Formation by Lenses

virtual particles

33.1: The Yukawa Particle and the Heisenberg Uncertainty Principle Revisited

Viscosity

12.4: Viscosity and Laminar Flow; Poiseuille's Law

viscous drag

12.6: Motion of an Object in a Viscous Fluid

visible light

24.3: The Electromagnetic Spectrum
29.3: Photon Energies and the Electromagnetic Spectrum

voltage

19.1: Electric Potential Energy- Potential Difference

voltage drop

21.1: Resistors in Series and Parallel

voltmeter

21.4: DC Voltmeters and Ammeters

W

watt

7.7: Power

wave nature

29.6: The Wave Nature of Matter
30.6: The Wave Nature of Matter Causes Quantization

wave velocity

16.9: Waves

wavelength

16.9: Waves
17.2: Speed of Sound, Frequency, and Wavelength
24.2: Production of Electromagnetic Waves

waves

16.9: Waves

Wheatstone bridge

21.5: Null Measurements

WIMPS

34.4: Dark Matter and Closure

Work

7.1: Work- The Scientific Definition

X

xerography

18.8: Applications of Electrostatics

Y

Young double slit

27.3: Young's Double Slit Experiment

Z

Zeeman effect

30.7: Patterns in Spectra Reveal More Quantization

zeroth law of thermodynamics

13.1: Temperature

zircon

25.4: Total Internal Reflection