List of common physics notations

Latin characters

Symbol	Meaning	SI Unit of Measure
A	area	
	magnetic vector potential	
Amplitude		
a	acceleration	meter per second squared (m/s²) or (ms^{-2})
$\mathbf{B}$	magnetic flux density also called the magnetic field density or magnetic induction	tesla (T), or equivalently, weber per square meter (Wb/m²)
C	capacitance	
	heat capacity	
	constant of integration	varied depending on context
c	speed of light (in a vacuum)	Meters per Second (m/s)
	speed of sound	Meters per Second (m/s)
	specific heat capacity	
$\mathbf{D}$	electric displacement field also called the electric flux density	coulomb per square meter (C/m²)
d	distance	meter (m)
	impact parameter	meter (m)
	diameter	
	differential (e.g. dx)	
$d\mathbf{A}$	differential vector element of surface area *A*, with infinitesimally small magnitude and direction normal to surface *S*	square meter (m²)
dV	differential element of volume *V* enclosed by surface *S*	cubic meter (m³)
$\mathbf{E}$	electric field	volt per meter (V/m)
E	energy	joule (J)
e	eccentricity	unitless
	2.71828... (base of the natural logarithm), electron, elementary charge	
$\mathbf{F}$	force	newton (N)
f	frequency	hertz (Hz)
	function	
	friction	
G	the gravitational constant	newton meter squared per kilogram squared (N m²/kg²)
g	acceleration due to gravity	
$\mathbf{H}$	magnetic field strength also called just magnetic field	ampere per meter (A/m)
H	Hamiltonian	joule (J)

h	height	
	Planck's constant	joule second (J s)
$\hbar$	reduced Planck's constant $\left(\frac{h}{2\pi}\right)$	joule second (J s)
I	action	joule second (J s)
	intensity	watt per square meter (W/m²)
	sound intensity	watt per square meter (W/m²)
	electric current	ampere (A)
	moment of inertia	
i	Cartesian x-axis basis unit vector	unitless
	intensity	watt per square meter (W/m²)
	imaginary unit	
$\mathbf{J}$	*free* current density, not including polarization or magnetization currents bound in a material	ampere per square meter (A/m²)
j	Cartesian y-axis basis unit vector	unitless
K	kinetic energy	joule (J)
k	Cartesian z-axis basis unit vector	unitless
	Boltzmann constant	joule per kelvin (J/K)
	wavenumber	
	wavenumber	
L	inductance	henry (H)
	luminosity	watt (W)
	angular momentum	newton metre seconds (N·m·s or kg·m2s−1)
l	length	
M	magnetization	ampere per meter (A/m)
	moment of force often simply called moment or torque	newton meter (N m)
m	mass	kilogram (kg)
N	normal vector	unit varies depending on context
	atomic number	unitless
n	refractive index	unitless
	principal quantum number	unitless
P	power	watt (W)
$\mathbf{p}$	momentum	kilogram meter per second (kg m/s)
	pressure	pascal (Pa)
Q	Electric Charge	coulomb (C)
	Heat	joule (J)
q	electric charge	coulomb (C)
R	Electrical resistance	ohm (Ω)
	Ricci tensor	unitless
	radiancy	

r	radius of rotation or distance between two things such as the masses in Newton's law of universal gravitation	meter (m)
	radius vector (position)	
S	surface area	m^2
	entropy	J/K
	action	
s	arc length	meter (m)
	displacement	
T	period	second (s)
	Thermodynamic Temperature also called absolute temperature	kelvin (K)
t	time	second (s)
$\mathbf{U}$	four-velocity	meter per second (m/s)
U	potential energy	joule (J)
	internal energy	joule (J)
u	relativistic mass	kilogram (kg)
	energy density	joule per cubic meter (J/m³) or joule per kilogram (J/kg) depending on the context
V	voltage also called electric potential difference	volt (V)
	volume	m^3
	shear force	
$\mathbf{v}$	velocity	meter per second (m/s)
W	mechanical work	
w	width	m
x	a generic unknown	varied depending on context
	displacement	
Z	Electrical impedance	

Greek characters

Symbol	Name	Meaning	SI Unit of Measure
α	alpha	angular acceleration	radian per second squared (rad/s²)
β	beta	velocity in terms of the speed of light c	unitless
γ	gamma	Lorentz factor	unitless
		photon	
		gamma ray	
		shear strain	
Δ	delta	a change in a variable (e.g. Δx)	unitless
		Laplace operator	

δ	delta	displacement (usually small)	
ϵ	epsilon	permittivity	farad per meter (F/m)
		strain	unitless
η	eta	energy efficiency	unitless
		coefficient of viscosity also called simply viscosity	pascal second (Pa s)
θ	theta	angular displacement	radian (rad)
K	kappa	torsion coefficient also called torsion constant	newton meter per radian (N m/rad)
Λ	lambda	cosmological constant	per second squared (s^{-2})
		wavelength	meter (m)
μ	mu	magnetic moment	ampere square meter (A m²)
		coefficient of friction	
		dynamic viscosity	
		permeability (electromagnetism)	
ν	nu	frequency	hertz (Hz)
		kinematic viscosity	
Ω	omega	ohm	
ω	omega	angular frequency	radian per second (rad/s)
ρ	rho	mass density usually simply called density	kilogram per cubic meter (kg/m³)
		free electric charge density, not including dipole charges bound in a material	coulomb per cubic meter (C/m³)
		resistivity	
Σ	sigma	summation operator	
σ	sigma	electrical conductivity	
		normal stress	
τ	tau	torque	newton meter (N m)
		shear stress	
		time constant	s
Φ	phi	field strength	unit varies depending on context
		magnetic flux	
ϕ	phi	electric potential	
π	pi	3.14159... (irrational number)	
Ψ	psi	wave function	unitless
ζ	zeta	damping ratio	unitless

Other characters

Symbol	Name	Meaning	SI Unit of Measure
$\nabla\cdot$	nabla dot	the divergence operator often pronounced "del dot"	per meter (m^{-1})
$\nabla\times$	nabla cross	the curl operator often pronounced "del cross"	per meter (m^{-1})
∇	nabla	del (differential operator)	
∂	"der", "dow", "die", "partial" or simply "d"	partial derivative (e.g. $\partial y/\partial x$)	

Article Sources and Contributors

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