1.3.1 Space and time

Name	*Symbol*	*Definition*	*SI unit*	*Notes*
cartesian space coordinates	x, y, z		m	
spherical polar coordinates	$r; \theta;\varphi$		m, 1, 1	
position vector	$\boldsymbol{r}$	$\boldsymbol{r} = x\boldsymbol{i} + y\boldsymbol{j} + z\boldsymbol{k}$	m	
length	l		m	
special symbols:				
height	h			
breadth	b			
thickness	d, δ			
distance	d			
radius	r			
diameter	d			
path length	s			
length of arc	s			
area	A, A_s, S		m^2	
volume	$V, (v)$		m^3	
plane angle	$\alpha, \beta, \gamma, \theta, \varphi...$	$\alpha = s/r$	rad, 1	
solid angle	Ω, ω	$\Omega = A/r^2$	sr, 1	
time	t		s	
period	T	$T = t/N$	s	
frequency	ν, f	$\nu = 1/T$	Hz	
angular frequency circular frequency	ω	$\omega = 2\pi\nu$	rad s^{-1}, s^{-1}	(1)
characteristic time interval, relaxation time, time constant	τ, T	$\tau = \left\| \mathrm{d}t/\mathrm{d}\ln x \right\|$	s	
angular velocity	ω	$\omega = \mathrm{d}\varphi/\mathrm{d}t$	rad s^{-1}, s^{-1}	(2)
velocity	$\boldsymbol{v}, \boldsymbol{u}, \boldsymbol{w}, \boldsymbol{c}, \dot{\mathbf{r}}$	$\boldsymbol{v} = \mathrm{d}\boldsymbol{r}/\mathrm{d}t$	m s^{-1}	

(1) The unit Hz is not to be used for angular frequency.

(2) Angular velocity can be treated as a vector.

Name	*Symbol*	*Definition*	*SI unit*	*Notes*
speed	*v, u, w, c*	$v = \lvert \boldsymbol{v} \rvert$	$\mathrm{m\ s^{-1}}$	(3)
acceleration	$\boldsymbol{a}$	$\boldsymbol{a} = \mathrm{d}\boldsymbol{v}/\mathrm{d}t$	$\mathrm{m\ s^{-2}}$	(4)

(3) For the speeds of light and sound the symbol c is customary.

(4) For acceleration of free fall the symbol g is used.