General Notation and Terminology

Please note the style followed in *Physical Review A* and *Physical Review E* for general notation and terminology.

The following notation may be used for intervals:

(0,1], [0,1), (0,1), [0,1],]0,1[, [0,1[,]0,1]

Power of 10 notation is printed with a multiplicative × between the number and the power of 10. Multiplicative ×'s should be substituted for blanks and dots. "E" notation should be changed to power of 10:

$$\left.\begin{array}{l} 5.1\text{E}2 \\ 5.1 \cdot 10^2 \\ 5.1\ .\ 10^2 \\ 5.1\ 10^2 \end{array}\right\} \longrightarrow 5.1 \times 10^2$$

$$6\text{E-}02,\ 6\text{E}{-}2 \longrightarrow 6 \times 10^{-2}$$

In tables, powers of 10 may be enclosed in brackets and a definition of the notation should be inserted in the caption:

$5.1[2]$

$6[-2]$

Uncertainties in numbers may be enclosed in parentheses. These may occur in text as well as in tables:

6532(12)

122.354(1)

A multiplicative × is printed between numbers:

217×136

and in the following cases:

const × n

$A \times 2 \times 10^8$

$$Z \times \left\{\begin{array}{l} r_1 \\ r_2 \end{array}\right.$$

is not printed as a symbol or abbreviation. Change # to No., N, or $\mathcal{N}$ where appropriate.

An ellipsis is indicated by three dots on the line within a series or array of numbers or symbols:

$a, b, c, \ldots, x, y, z$

$1, 2, 3, \ldots, n-1, n$

$1, 2, 3, \ldots$

$123 \ldots 9$

Three dots are also on line for irrational numbers:

$\pi = 3.14159\ldots$

An ellipsis between mathematical operators (explicit or implied operators) is indicated by three centered dots:

$a + b + \cdots + y + z$

$y_1 y_2 y_3 \cdots y_{n-1} y_n$

$1 \times 2 \times \cdots \times 8 \times 9$

$t_1 < t_2 < \cdots < t_n$

An ellipsis between brackets or parentheses may be indicated by three centered dots, one centered dot, or a thin space:

$\langle \cdots \rangle$

$\langle \cdot \rangle$

$\langle\ \rangle$

The symbol for Boltzmann's constant is k_B or k. If a subscript is printed it should be capital italic B. The symbol for "order of" in mathematical expressions is generally O, although o may also be printed (uppercase and lowercase symbols have different meanings):

$O(\mathrm{x}^5)$, $o(\mathrm{x}^5)$

"th" or "st" following a variable in text is printed on line:

nth, $(n-1)$st, $(n+1)$st

In mathematical expressions, standard abbreviations for Hermitian conjugate, Hermitian adjoint, and complex conjugate are

H.c.

H.a.

c.c.

In mathematical expressions, "constant" is abbreviated and printed in roman font without a period:

const

Computer programs and computer languages are printed in text in small capital letters:

MATHEMATICA

FORTRAN

Units are printed in roman font:

s, sec

cm

μm (not micron)

eV

kV

a.u. (for atomic units)

arb. units (for arbitrary units)

Greek symbols should be printed, in general, not the name of the symbol:

ρ (not rho)

δ (not delta)

β (not beta)

The name of the symbol may be printed for definitions in text:

δ is the Dirac delta function.

Common multiletter functions are printed in roman font. (Parentheses, square brackets, or curly brackets may follow these functions.)

sin	(sine)
cos	(cosine)
tan	(tangent)
sinh	(hyperbolic sine)
cosh	(hyperbolic cosine)
csc	(cosecant)
tanh	(hyperbolic tangent)
exp	(exponential)
ln, $\log_{10}$, $\log_2$	(The base of the logarithm should be indicated.)
cov	(covariance)
det	(determinant)
div	(divergence)
grad	(gradient)
Im	(imaginary part of) (not $\Im$)
Re	(real part of) (not $\Re$)
Prob	(probability function)
sgn	(signum)
Tr, tr	(trace)

The following multiletter functions take parentheses or bold parentheses:

Ai, Bi	(Airy integrals)
Ci	(first cosine integral)

The symbol for principal value is printed uppercase roman:

$$\mathrm{P}\int f(x)dx$$

$$\mathrm{P}\frac{1}{w_L - w_k}$$

Symbols introduced by authors to be used in mathematical expressions should be single-letter symbols, possibly with subscripts or superscripts. These single-letter symbols are generally printed italic. Other fonts, such as script or German, may be introduced in order to make distinctions between symbols.

The set of real numbers and the set of complex numbers are printed in open font:

$$T:\ M \longrightarrow \mathbb{R}$$

$$T:\ N \longrightarrow \mathbb{C}$$

Three-vectors and some matrices may be boldface. Matrices may also be printed italic with a single printed underline. Sans serif notation is normally reserved for tensors or to describe shapes:

U-shaped tube

Functions are indicated by parentheses:

$$f(x, y, z)$$

Functionals are indicated by square brackets:

$$f[g, h]$$