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1 General Guidance

1.1 Figure numbering

Tables, Figures and Captions (see Sec. 4 for formatting properly in L^AT_EX).

In Eq. (13), (14), and (16)

In Fig. 4(a)

In Ref. 5

Place the caption under figures and images and above tables.

1.2 Dates and numbers

02 February 2016 (no commas)

four or fewer numbers closed up:

1200

24.0032 cm

Five or more digits, spaces instead of commas:

12 000

24.077 89 cm

one through ten

11,12 and above

2x2 matrix (numerals)

0.03 and 106.0 (no “naked” decimal points)

6 V (number before units are always numerals)

1D, 2D, 3D

1.3 Punctuation

en-dash: Paris–London train, (1950–), University of Wisconsin–Madison

serial commas (a, b, and c)

hyphenate multi-word modifiers: macro-time

parenthesis:

inserted into another sentence, no period (such as this).

isolated, period inside. (Such as this.)

pairs surrounded letters in innumeration list (a) and (b)

possessives: Smith and Green’s theory

plurals:

1950s

x’s, K’s

quotation marks after commas and periods, before colons and semi-colons

in general, place “e.g.” and “i.e.” in parenthesis, not commas and include a comma after (e.g., like this).

1.4 Abbreviations

Plural add ’s: LCAO’s

2 Specific words and terms

A

α particle
ad hoc
à la
 anti-compounds closed (antilogarithm)

B

burnup (n)

C

Cartesian
 collision-flux estimator
 cross-section (n)
 cross term

D

delta-tracking
 Doppler
 downscatter

E

eigenfunction
 eigenvalue

F

Fourier transform/analysis/spectra

G

Gauss-Seidel (adj)

H

half-compound hyphenated:
 half-life
 halfway

I

indexes (to book)
 indices (to variable)
in situ

J

K

L

Laplacian
 l.h.s.
 lifetime

M

Maxwell(ian)
 midpoint
 modeling
 multigroup
 multivariant

N

non-compound closed:
 nonelastic
 nonradioactive
 but proper noun, symbol, numeral:
 non-Fermi
 12-fold

O

P

path length

Q

R

radioactive
 ray tracing
 r.h.s.
 runtime

S

setup
 self-compound hyphenated:
 self-shielded (adj)
 semiempirical
 semi-infinite

T

track length

track-length estimator

U

upscatter

uranium

V**W**

waveheight

wavelength

X

x ray (n)

x-ray (adj)

Y**Z**

3 Math and notation

3.1 Cross-sections

Macroscopic cross-sections are used so infrequently in neutronics that reserving the use of capital sigma, Σ , is inefficient. Use the following notation to differentiate between the two:

macroscopic: $\tilde{\sigma}$

microscopic: σ

3.2 Integrals

To ease reading, for single-integration integrals, place the differential on the right side, with a space between the last variable and the d ,

```
\int f(x)\,dx
```

$$\int f(x) dx$$

For multiple-integration integrals place the differential immediately after its corresponding integral symbol, place a space after the last differential:

```
\int_{0}^{1}dx \int_{0}^{1} dy\,f(x,y)
```

$$\int_0^1 dx \int_0^1 dy f(x, y)$$

The space helps emphasize that the differential is a single variable.

Use parenthesis or brackets for any integral with multiple terms, the extra space is not required if the `\left` and `\right` commands are used, but are required otherwise; see examples:

```
\int \left[f(x) + g(x)\right]dx
```

$$\int [f(x) + g(x)] dx$$

```
\int [f(x) + g(x)]\,dx
```

$$\int [f(x) + g(x)] dx$$

```
\int_{0}^{1}dx \int_{0}^{1} dy\left[f(x,y) + g(x,y)\right]
```

$$\int_0^1 dx \int_0^1 dy [f(x, y) + g(x, y)]$$

```
\int_{0}^{1}dx \int_{0}^{1} dy\,,[f(x,y) + g(x,y)]
```

$$\int_0^1 dx \int_0^1 dy [f(x, y) + g(x, y)]$$

3.3 Matrices

Bold capital letters, **A**.

Use brackets (`\bmatrix`) for normal matrix, pipes (`\vmatrix`) for determinants, and double pipes (`\Vmatrix`) for a matrix norm.

3.4 Vectors

Topped with an arrow, $\vec{\phi}$. Vector superscripts must be shifted slightly using `\vec{\phi}^{\ell}`. For comparison:

$$\begin{array}{ll} \vec{\phi}^{\ell} & : \vec{\phi}^{\ell} \\ \vec{\phi}^{\ell} & : \vec{\phi}^{\ell} \end{array}$$

Use hats to denote unit vectors, $\hat{\Omega}$.

In general, if a vector is made up of other vectors, use a capital letter for the larger vector, and lowercase for the smaller vectors.

$$\vec{\Phi} = \begin{bmatrix} \vec{\phi}_0 \\ \vec{\phi}_1 \end{bmatrix}$$

4 Other L^AT_EX specific items

4.1 Figures

Place the `\label{}` for figures inside the caption to ensure correct references:

```
\caption{This is the caption.\label{fig:ref}}
```

4.2 Labels

Use the following formats for labels:

Chapters	<code>\label{sec:chapter_name}</code>
Sections	<code>\label{sec:chapter_name:section_name}</code>

4.3 Package settings

Always hide boxes from hyperref package:

```
\usepackage[hidelinks]{hyperref}
```

4.4 Programming language names

For the C++ programming language use:

```
\newcommand{\Cpp}[1][\textrm{C\nolinebreak[4]\hspace{-.05em}\raisebox{.4ex}{\tiny\bf ++}\#1}]
```

This greatly improves the look of the name:

C++17	C++
<code>\Cpp{17}</code>	C++17

4.5 References and citations

For equations, use the `amsmath \eqref{label}` function.

$$E = mc^2 \tag{1}$$

This correctly formats `Eq.~\eqref{eq:relativity}` as Eq. (1).

Use `Sec.~\ref{sec:latex}` for sections, which correctly formats as Sec. 4.

For figures, use `Fig.~\ref{fig:image}`, which correctly formats as Fig. 1.

For subfigures, include the packages and commands:

```
\usepackage{caption, subcaption}
\renewcommand\thesubfigure{(\alph{subfigure})}
\captionsetup[sub]{labelformat=simple}
```

and reference the subfigure itself, which will format correctly as Fig. 1(a). See documentation for these packages if needed.

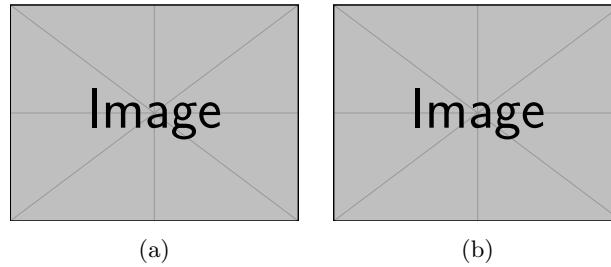


Figure 1: Subfigure with parts (a) and (b).

4.6 Spacing

For abbreviations use `.\` or `.\~` if a tie is needed (titles or other words that should not be separated).

Normal	e.g. this example; seen in Fig. 1
Proper	e.g. this example; seen in Fig. 1

Note: the bibliography handles this correctly already.

Specify interspace spacing, `\@.` if a capital letter ends a sentence:

Normal	The code is called BART. As you can see.
Proper	The code is called BART. As you can see.