



# De La Salle University Physics Style Guide

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# **De La Salle University Physics Style Guide**

## **I. INTRODUCTION**

This guide is intended to help physics students of

Chapter 4: Expected Output  
Resource Requirement  
Timetable

References

and a thesis/dissertation generally contains the following:

- a. Title Page
- b. Approval Sheet
- c. Abstract
- d. Acknowledgments
- e. Table of Contents
- f. List of Figures
- g. List of Tables
- h. Chapter 1 : Introduction
- i. Chapter 2 : Review of Related Literature and Framework of the Study
- j. Chapter 3 : Methodology
- k. Chapter 4 : Results, Dis493(e)3.15.4782(378208(l)-2.53536(t)-2.53536(s)57( )-0.478208(D)0.6225

### **C. Abstract**

The abstract should be a concise summary of the subjects treated in the thesis. It is normally used as a basis for indexing and may be published separately in dissertation abstract journal. Therefore it should be completely self-contained (no footnotes or numbered references) and should avoid the use of “I” or “we.” Substitute “the author(s)” or passive constructions for the first person. The abstract should consist of no more than 500 words. The first line is not indented.

### **D. Acknowledgments**

The acknowledgment section follows the abstract and precedes the table of contents. A centered principal heading (level one) is used for this section, but the section is not numbered. Note that “Acknowledgments” is spelled without an *e* between the *g* and the *m*. Acknowledgment of financial support (for funded projects) is listed at the end. Thanks should not be directed to examiners for the performance of their refereeing duties.

### **E. Table of Contents**

Every titled chapter, section and subsection of the paper should be listed here, using exactly the same wording as is used where it appears in the main body. Unnumbered sections like Acknowledgments and References begin flush with the left margin. Page number for each section and subsection is flushed right.

### **F. List of Figures and List of Tables**

Every figure and table in the thesis should be listed here, using exactly the same numbering and caption as they appear in the main body. Page n

### III. CHAPTER AND SECTION HEADINGS

Chapter headings are placed on the same page as the text of the chapter. They are centered at the top of the first page of the chapter. The chapter heading is placed on top of the chapter title. For example,

CHAPTER 1  
**INTRODUCTION**

There are four types or “levels” of section headings. All begin flush with the left-hand margin (not centered) and are set off from the text by two line spaces above and one line space below. No period follows them. The following list shows the four different levels and the appropriate style for each:

Level One

**I. PRINCIPAL HEADING**

All capital letters, preceded by a roman numeral and a period. Uses a boldface type font.

Level Two

**A. First subheading**

First word capitalized, preceded by a roman capital letter and a period. Boldface.

Level Three

1. Second subheading

First word capitalized, preceded by an arabic numeral and a period.

Level Four

*a. Third subheading.*

First letter capitalized, preceded by a lowercase letter and a period. Italics. Heading must be preceded by a blank line.

## **IV. NUMBERING OF FIGURES, TABLES, AND EQUATIONS**

### **A. Figure numbering**

Figures are numbered consecutively throughout the whole thesis (not by chapter or section), using arabic numbers (1, 2, 3, etc.). Parts of figures are labeled (a), (b), (c), etc., with parentheses enclosing the letter. If a figure occurs in an appendix, it should be numbered to continue the

Appendices are placed after the main body and before the listing of references. They must have a heading (centered Level One), which may be in a variety of styles, illustrated below:

**APPENDIX: SURVEY OF RESULTS**

**APPENDIX A: SURVEY OF RESULTS**

**APPENDIX**

If there are subheadings within an appendix, they are numbered with arabic numbers, in the style of Level Two.

**VI. SUPPLEMENTARY MATERIAL NOT IN APPENDICES**

Occasionally authors wish to include in the text material that may not be of interest to all readers, and to indicate that such material may be skipped over by the general reader. If the material is not long enough to warrant an appendix, the author is urged to consider other alternatives—including it as part of the regular text, putting it in a footnote, or omitting it altogether.

Very long tables, raw data (if requested by panel of examiners), computer programs and source codes, multimedia, and color figure files may be put in electronic format and burnt into a CD-ROM, and the reader referred to them by means of a footnote. The CD-ROM is to be inserted in a pocket placed on the inside back cover of the thesis.

**VII. REFERENCES**

References are listed alphabetically by author. This enables the reader to scan the list of references easily and to see at a glance when the work of one person or group is represented by several articles. Since the references are not numbered, citations to them in the text must identify them by authors' names and year of publication. This saves the reader time by giving the essential information—author and year—where the work is mentioned, thus sparing the reader the effort of turning to the end of the thesis to decode each reference number.

**A. Citations in the text**

The authors and years of individual references may be cited in the text in several ways, all of which employ parentheses. Here are some examples:

- (1) The object N 157B in the Large Magellanic Cloud shows a filled center and nonthermal spectrum at both radio and x-ray wavelengths (Clark *et al.*, 1982).
- (2) The interested reader will find good discussions of much of this work in Potter (1983), Hockney and Eastwood (1991), and Birdsall and Langdon (1995).



- (3) The field of nonlinear transport, which had been initiated long before by a few pioneer papers (Landau and Kompanejev, 1934; Davydov, 1936, 1937), then entered a period of rapid development.
- (4) The constant  $C$  can be obtained from Cohen and Keffer (1955; see also Osheroff *et al.*, 1980 and Roger, 1980).

In example (1), *et al.* has been used, signifying that there are three or more co-authors. Of course, the names of all co-authors will be given in the list of full references at the end of the paper. However, there are cases in which it would be preferable to name the coauthors in the text as well, for example, if two papers by Clark and co-workers were listed in the references for 1982, one by Clark, Jones, and Smith, and the other by Clark, Lewis, and Jones. These could not be labeled 1982a and 1982b because they are not by the same group.

In example (2), only the year of the reference appears in parentheses. It is unnecessary to repeat the author's name in parentheses when it occurs naturally as part of a sentence.

In example (3), a list of references is given within parentheses. Note that they are arranged chronologically, with the earliest first, and that a semicolon separates one reference from the next. When the list contains more than one work that appeared in the same year, these should be arranged alphabetically by authors' names. Commas separate authors' names from years. When more than one work by the same author is cited, the years are separated by commas. No "and" is used before the last citation.

## B. Citations in footnotes

We encourage authors to put long lists of references in footnotes if it would be cumbersome and detrimental to the flow of the article to keep them in the text. Of course, single citations are always made in the text. As footnotes should be notes and not just lists, incorporate your list of citations into a sentence, e.g.,

<sup>1</sup>For historical background on this problem, see Adams and Withey (1952, 1970), . . .

<sup>2</sup>A number of theorists have proposed alternatives to this model which we shall not discuss here. They include . . .

See also Sec. VIII.B on textual footnotes.

**C.**

## 2. Russian journal articles with English journal translations

Maximov, A. V., and V. P. Silin, 1993, *Zh. Éksp. Teor. Fiz.* **103**, 73 [JETP **76**, 39 (1993)].

List the translation journal after the original Russian journal; it is not necessary to say that the second reference is a translation. Enclose the translation reference in square brackets. Since translations sometimes appear in a later year than the original, give the year of the translation in parentheses at the end. When translation and original appear in different years, the citation in the text should be to the earlier of the two, i.e., the original Russian journal.

## 3. Books

Barcons, X., and A. C. Fabian, 1992, Eds., *The X-ray Background* (Cambridge University, Cambridge, England).

Feynman, R. P., and A. R. Hibbs, 1965, *Quantum Mechanics and Path Integrals* (McGraw-Hill, New York).

Geiss, J., 1993, in *Origin and Evolution of the Elements*, edited by N. Prantzos, E. Vangioni-Flam, and M. Cassé (Cambridge University, Cambridge, England), p. 89.

Mathieu, H. J., 1984, in *Thin Film and Depth Profile Analysis*, edited by H. Oechsner, Topics in Current Physics No. 37 (Springer, Berlin), p. 39.

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When the proceedings are part of a series, give the series name and number after the title. Be sure to include the name and city of the publisher. If the proceedings are to be published in a special issue of a journal, say so. Do not abbreviate the words “proceedings” and “international.”

#### 5. Theses, preprints, and other references

Below are examples of the correct form for listing theses, preprints, reports, and unpublished work.

Allard, F., 1991, Ph.D. thesis (University of Heidelberg).

There is no need to add “unpublished” to a thesis or report reference.

Polchinsky, J., and E. Witten, 1996, “Evidence for Heterotic Type-I String Duality,” preprint hep-th/9510169.

Binette, L., 1984, “Photoionisation models for liners: gas distribution and abundances,” European Southern Observatory Scientific Preprint No. 350.

Cowley, C. E., 1998, Phys. Rev. A (in press).

Wagner, Z., 1994, unpublished.

If a preprint exists, but the paper has not yet been accepted for publication, give either the preprint number or the preprint title and institution, to aid the interested reader in obtaining a copy. The preprint title is placed in quotation marks. Do not say, “submitted to . . . ,” “in preparation,” or “to appear.”

When a paper has been accepted by a journal but not yet published, give the journal name followed by “(in press).” Frequently such entries can be updated in proof to include volume and page numbers.

If a preprint of the work is not available, the work should be cited as “unpublished” or “private communication,” with the year.

**D. Order of reference list**

The reference section is arranged alphabetically by author. When several works by the same author are included, these are arranged chronologic

## VIII. FOOTNOTES

Footnotes may be used in the body of the text (to make short comments about the textual material), and in tables or figures. Note that footnotes are *not* used in the thesis for purely bibliographic purposes, except for long lists (see Sec. VII.B)

### A. Textual footnotes

\footnote{ }

Indicate footnotes in the text by the insertion of superscript numbers, in this manner:

The appearance of these data caused a furor<sup>3</sup> among the theorists.

Acceleration, vibration,<sup>4</sup> temperature gradients, and temperature changes all produce stresses in the active region of the device.

When punctuation is present at the point where a footnote is cited, place the superscript number *after* commas, periods, and quotation marks, but *before* colons and semicolons.

Be cautious about placing a superscript footnote number immediately after quantitative material, where it might be mistaken for an exponent. In such cases, the footnote usually can be cited elsewhere in the sentence; if no other position can be used, spell out the word “footnote” in parentheses (footnote 4), on the line, instead of using a superscript number.

Each note is in the form of a paragraph (i.e., first line indented), beginning with a superscript number one space in from the left-hand margin.

Although simple citations of sources are not treated as footnotes (see instructions for references), bibliographic material may be incorporated in footnotes, as in the following examples:

<sup>1</sup>Their result was also presented at Les Houches by Corbie *et al.* (1984).

<sup>2</sup>Mason (1950) gives an alternate method for calculating  $c_i$ .

<sup>3</sup>A description of these early experiments can be found in Adams, 1978. The present status of such experiments is discussed in reviews by Stein (1998) and Callaghan (1999).

<sup>4</sup>See Rubbia's comment after G. Myatt's talk at the 1

## B. Notes in tables and figure captions

Most notes in figure captions and tables are simple references to sources and can be treated in the same way as bibliographic references in the text, i.e., by naming author and year in parentheses.

Examples:

FIG. 1. The  $^3\text{He}$  data compared to the prediction of Maize and Kim (1983): dashed curve, impulse approximation; solid curve, impulse approximation plus MEC.

FIG. 2. Einstein Observatory (HEAO 2) data on the x-ray spectrum of Tycho Brahe's supernova remnant. From Becker *et al.*, 1979.

FIG. 3. Typical recorded spectra when argon ions are incident on thick silicon and carbon targets (adapted from Jones *et al.*, 1972).

In tables, use lower-case roman letters to identify the footnotes, placing them as superscripts to table entries or headings and placing them on-line when they replace a missing entry. Order

(2) wide (two columns, 17.8 cm or 7.0 in), `\widetext`

(3) medium (1.5 column width, 14 cm or 5.5 in.), `\mediumtext`

(4) turned table (one-page length turned sideways, 25.4 cm or 10.0 in.).

## B. Table captions

Each table that is not part of the text must have a descriptive caption. It should be as concise as possible. If it is made up of more than one sentence, treat it as a single paragraph.

The caption is positioned above the table. It begins with the word *table*, in capital letters, followed by the appropriate roman numeral and period, and then a small amount of explanatory text.

Examples:

TABLE I. Spin-orbit parameters.

TABLE II. Calculated  $M1$  matrix elements for  $^{156}\text{Gd}$ ,  $M_{rs}(M1) = S1|M(M1)|r$  in  $10^{-2} \mu_N$ .

## C. Lines and space in tables

A simple table needs lines in only three locations: two lines together at the beginning and end of the table and a single line separating the headings and columns of entries. A more complicated table, one made up of several parts and having more than one set of headings, will need additional space and lines. Extra space running horizontally can be used to distinguish broad groups among the entries.

## D. Headings within tables

Always capitalize the first word or abbreviation in all headings and subheadings. Column headings are separated from the body of the table by a horizontal line. They are usually dropped to the bottom of the heading area. However, units of measure that pertain to each entry in a whole column should be included in parentheses and placed as the last entry in the heading on their own line (sample 1) or spaced off from the heading on the same line (sample 2).



Sample 1
Branching ratios
[REDACTED]

Sample 2	
$E_x$ (MeV)	$J^\pi$
2720	$2^-$
411	$2^-$

Figure 1 shows experimental results.

Experimental results are shown in Fig. 1.

The results, however, are conflicting (see Fig. 1).

Note that the word figure is written out when it begins a sentence, but it is abbreviated at other times.

### C. Figure captions

Every figure should have a caption, even though it may consist only of an abbreviated title.

Example:

FIG. 1. Schematic drawing of the R110 apparatus. From Camilleri *et al.*, 1981.

Give the symbol or describe the curve *before* you give its definition.

Examples:

FIG. 2. Measured and theoretical rotation-rate uncertainty as a function of integration time  $\tau$ :  $\tau$ , first harmonic measurement, with the solid line being the corresponding shot noise;  $\tau$ , second harmonic measurement, with the dashed line indicating the corresponding shot-noise limit. From Davis and Ezekiel (1981).

FIG. 3. Suppression factor  $S$  for magnetic suppression: long-dashed curve,  $E50.1 EB$ ; short-dashed curve,  $E510 EB$ ; solid curve,  $E51 EB$ .

When two or more figures are grouped together as part15789(s)-1.7465(u)-0.5011(e)3.15789(,)-0.47820

## **A. Hyphenation**

The purpose of hyphenation is to resolve ambiguity as to which words are being modified in multiword terms containing more than one noun. The

To sort a string of modifiers, you can use a combination of hyphens and longer dashes (two-particle–two-hole configuration) or hyphens and a slash (two-particle/two-hole).

## **B. Use of the comma**

*DLSU Physics* style calls for a comma before “and” at the end of a list. This is known as the “serial comma”:

Grant, Komsky, Oswald, and Peters

oscillating, rotating, or stationary

When introducing a variable, do not set it off with commas when it immediately follows the

(hereafter EPR; Einstein, Podolsky, and Rosen, 1935).

Parenthetical remarks usually do not have closing punctuation inside the parentheses (as you might expect). However, a separate and complete sentence within parentheses, beginning with a capital letter, should have its end punctuation inside: (Armitage took exception to Brown's approach, as we shall see below.)

#### D. Use of the colon

The most frequent misuse of the colon is in introducing equations. A colon should not follow a form of the verb “to be” and it should not come between a verb and its object or between a preposition and its object. Often a displayed equation is the object. Thus the following lead-ins to equations should not have colons, or indeed any end punctuation:

We obtain

The result is

This reduces to

Then the coordinates are given by

Colons may, however, be used to introduce equations when the object has already been stated or the clause completed:

We obtain the following distribution:

The result is a multidimensional gamma function:

Open sets can be characterized as follows:

This produces a power-law series:

A second question concerning the use of colons is whether to capitalize what follows them. The answer may be stated in three parts:

(1) Phrases introduced by a colon do not begin with a capital letter:

Furthermore, the lake has a natural noise center source: a dam.

(2) A complete sentence introduced by a colon may be, but need not be, capitalized:

Finally, the energies of bound surface states are calculated by means of the “effective-Hamiltonian” technique: Let  $H_{\text{eff}}$  be defined by  $E - H_{\text{eff}} = G_0(E^{-1} - V)$ .

- (3) When more than one sentence is introduced by a colon, capitalize the first word:

In order to tackle Eq. (A5) we introduce the following simplifications and approximations: (1) Each eigenmode in the band is excited by white noise. (2) No eigenmode beyond the band is excited. (3) Because the . . .

### **E. Use of the apostrophe**

- (1) Contractions. Contractions such as don't, haven't, they'll are well established in spoken English, but they have not yet won a place in the pages of physics literature. Please do not use them in your *thesis*.
- (2) Plurals. To form the plural of a number, add s: 1980s, tens of eV. To form the plural of a symbol, add 's (apostrophe s): A's, x's. To form the plural of an abbreviation or an acronym, you may add either s or 's: LCAO's or LCAOs.
- (3) Possessives. To form the possessive of a name, add 's (apostrophe s), regardless of the number of syllables or final letter: Green's, Jones's, de Gennes's.

Be careful not to create imaginary possessives by adding unneeded apostrophes to terms like Kramers doublet or Higgs field. Although contemporary usage may be moving in the direction of “Green function,” the editors of some journals still prefer “Green's function.”

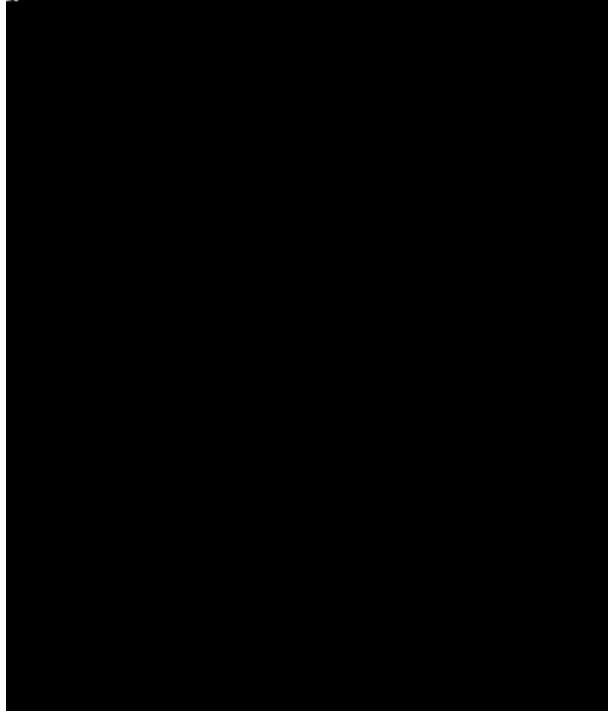
### **F. Use of exclamation points and italics**

It is not the style of a thesis to clamor for its readers' attention. The use of exclamation points and italics for emphasis should be as restrained as possible. Italics should also be used sparingly. It is conventional to italicize terms when they are introduced and defined.

## **XII. ABBREVIATIONS AND ACRONYMS**

Abbreviations and acronyms should be kept to a minimum. Use only a handful of the best-known or most widely used, keeping in mind that a broad audience including physicists from other subfields will be reading the thesis and should not be forced to learn a code at the same time. Here are a few guidelines to keep in mind.

- (1) Define all abbreviations and acronyms the first time you use them.
- (2) Do not use an acronym as the subject of a sentence, even though it has been previously defined or is well known. For example, replace ``CD



Other units used in the article should be defined in terms of the standard units. The use of historic units that have been superseded in the modern physics literature is discouraged. These include wave numbers for energy, oersteds and gauss for magnetic fields, atmospheres for pressure, and curies for radioactivity.

(1) The number (numeral) is separated from the unit following by a full space, e.g.,

1.8 MeV.

(2) Most units have a single form for both singular and plural, i.e., 1.0 cm and 2.7 cm.

(3) Most symbols for units are printed in lowercase roman type without periods. Units derived from proper names, however, are written with initial capital letters, i.e., coulomb (C), weber (Wb).

(4) The abbreviated form of a unit must be used after a number given in numerals: 1 cm (not 1 centimeter) but the unit is written out in cases like “a few centimeters.”

(5) Decimal multiples or submultiples of units are





TABLE IV. Diacritical signs in math.

Symbol	TeX
$\vec{x}$	<code>\vec{x}</code>
$\bar{x}$	<code>\tensor{rm x}</code>
$\dot{x}$	<code>\dot{x}</code>
$\ddot{x}$	<code>\ddot{x}</code>
$\hat{x}$	<code>\hat{x}</code>
$\tilde{x}$	<code>\tilde{x}</code>
$\bar{x}$	<code>\bar{x}</code>
$\underline{x}$	<code>\underline{x}</code>

3.  $\vec{x}$ ,  $\bar{x}$ ,  $\dot{x}$ ,  $\ddot{x}$ ,  $\hat{x}$ ,  $\tilde{x}$ ,  $\bar{x}$ ,  $\underline{x}$

All available characters can be used as subscripts or superscripts. Position of subscript or superscript is dictated by standard notation. In almost all cases you should set right and left subscripts and superscripts flush against the symbol they accompany (as in the following):

$$R_0^x, {}^{110}\text{Ag}^m, \rho_0^{(N)}, {}^{14}\text{N},$$

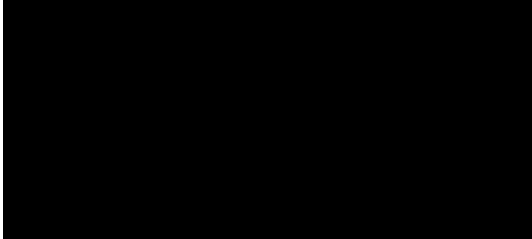
$$\int_0^1, \sum', {}^{14}\text{N}_2,$$

$$\lim_{\dots}(\text{in text})$$

There are, however, some exceptions to this general rule. Examples appear below:

tensor notation:  $g_{\mu\nu}(\phi^z)^\alpha; \alpha$

`g_{\mu\nu}(\phi^z)^\alpha; \alpha`



Presuperscripts or presubscripts are set flush against the symbols they accompany. In addition, it is advisable to insert an extra thin space between a presuperscript or presubscript and a preceding symbol in cases where clarity is questionable, i.e.,

$$8p\sigma^1\Sigma_u^+ \text{ or } d^9s^2p^3P_2.$$

`$8p\sigma^1\Sigma_u^+ or d^9s^2p^3P_2.`

`8p\sigma^1\Sigma_u^+ or d^9s^2p^3P_2.`

The number of levels of subscripts and superscripts attached to a symbol will also affect clarity. Two double levels is generally considered the most complicated combination acceptable, i.e.,

$$M_{b_k}^{\alpha_i^2}$$

`$M_{b_k^{\dagger}}^{\alpha_i^2}$`

$\sin[-(x+a)]$ ,  $(\sin x)/a$ , and

$\exp[y^2/(b+h_2)-1/2]$

## 2. Punctuation

Even though displayed math is separated by space from the running text it still is a part of that text and needs to be punctuated accordingly. The following is an example.

Eg.  $3.68089(a + 3.68089(r + 78208(t) - 2 - 12.2556(g + 3.68089$

#### 4. ~~Equation numbering~~ ~~Equation numbering~~

Equation numbers are placed flush with the right margin:



Some situations require unique numbering. Please use the forms shown in the following examples when you encounter similar circumstances.

- (1) A set of equations of equal importance may be numbered to demonstrate that relationship, e.g., (1a), (1b), and (1c).
- (2) A principal equation and subordinate equations (those that define quantities or variables in that equation) may be numbered (1), (1a), and (1b), etc.
- (3) If an equation is a variant of a previous equation (it may be separated from the original equation by other equations and/or by text), it may be numbered with the same number as the original and a prime, double prime, etc., as appropriate.

#### D. Bracketing

##### 1. ~~Equation numbering~~ ~~Equation numbering~~

For the purpose of grouping, the preferred sequence of bracketing is  $\{[(())]\}$ , working outwards in sets  $()$ ,  $[\ ]$ , and  $\{ \}$ . If you have used these three sets and need additional bracketing, begin the sequence again in the same order but in bold print:



For grouping situations that contain built-up material and need larger sized bracketing, it is preferable to start again at the beginning of the sequence around the built-up material, i.e.,

$$\left[ \left( \frac{(a-2)^{1/2}}{a^2} \right) \left( \frac{(x+2)^{1/2}}{\beta} \right) \right] = 0.$$

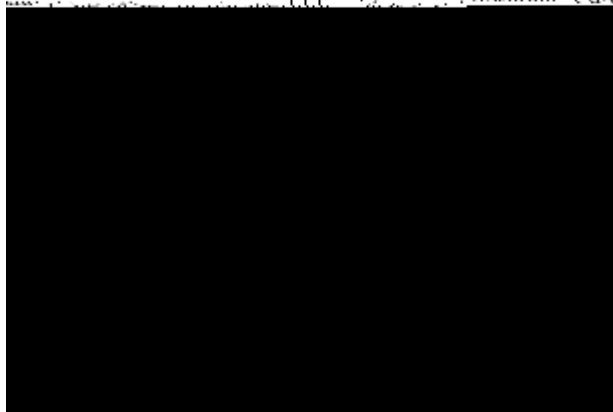
##### 2. ~~Equation numbering~~ ~~Equation numbering~~

Bracketing (ordered and special) is also used to create specific notation that defines what it encloses. A list of approved specialized notation is included below. When used in an equation along with ordered bracketing, this special kind of bracketing should not alter the regular sequence of bracketing. The special notation in the following equation does not interfere with the sequence of the equation bracketing:

$$\hbar[E - (a+1)]^{-1} = 0.$$

### 3. $\{ \}$ $\langle \rangle$ $[ ]$ $( )$

Plane or set of parallel planes	$\{111\}$
Direction	$[111]$
Class (group) of symmetry equivalent directions	$\langle 111 \rangle$
Class (group) of symmetry equivalent planes	$\{111\}$
Point designated by coordinates	$(x, y, z)$
Lattice position in a unit cell ( <i>not</i> bracketed)	



## E. Additional style guidelines

### 1. $\infty$ $\bullet$ $\prime$ $\prime$

In displayed math, limits are treated in the following manner:

$$\sum_{i=1}^k \quad \sum_{n=1}^{\infty} \quad \sum_{l'} \quad \prod_{n>1}$$

$$\int_{-\infty}^{+\infty} \int_{-\infty}^{+\infty} \lim_{\alpha \rightarrow 0} \dots$$

Stacking of limits, seen in the first example, is possible, as is centering. In text, however, limits must be treated as subscripts and superscripts. The second example above should be set  $\Sigma_{r=1}$  in text. The stacking in the first example would mean that any math containing that summation



(e) When slashing fractions, respect the following conventions. In mathe

$\infty$  is proportional to  
 $O(\ )$  of the order  
 $A^*$  complex conjugate of  $A$



5.  $\frac{1}{n} \log n \sim \frac{1}{n} \log n$

You may use radical signs

(rooted only,  $\sqrt{xx}$ )

and