

# Manuscript Title: with Forced Linebreak

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An article usually includes an abstract, a concise summary of the work covered at length in the main body of the article. It is used for secondary publications and for information retrieval purposes. Valid

## I. FIRST-LEVEL HEADING

This sample document provides an introduction to the use of REVTeX 4 (and L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>) in manuscripts prepared for submission to APS journals. Please see the file `apssamp.tex` for a more complete demonstration.

### A. Second-level heading

This is how to make a subsection.

#### 1. *Third-level heading: References and Footnotes*

To cite bibliography entries, use the `\cite{#1}` command. The APS journal styles will display the corresponding number(s) in square brackets: [1, 2].

Footnotes are produced using the `\footnote{#1}` command.

## II. MATH AND EQUATIONS

Inline math may be typeset using the `$` delimiters. Bold math symbols may be achieved using the `bm` package and the `\bm{#1}` command it supplies. For instance, a bold  $\alpha$  can be typeset as `$$\bm{\alpha}$$` giving  $\alpha$ .

In L<sup>A</sup>T<sub>E</sub>X there are many different ways to display equations, and a few preferred ways

are noted below. Displayed math will center by default. Use the class option `fleqn` to flush equations left.

Below we have numbered single-line equations; this is the most common type of equation in *Physical Review*:

$$Q = \int \rho d^4x = \frac{1}{32\pi^2} \int F_{\mu\nu}^a \tilde{F}_{\mu\nu}^a d^4x. \quad (1)$$

When the `\label{#1}` command is used [cf. input for Eq. (1)], the equation can be referred to in text without knowing the equation number that  $\text{\TeX}$  will assign to it. Just use `\ref{#1}`, where `#1` is the same name that used in the `\label{#1}` command.

Unnumbered single-line equations can be typeset using the `displaymath` environment:

$$g^+ g^+ \rightarrow g^+ g^+ g^+ g^+ \dots, \quad q^+ q^+ \rightarrow q^+ g^+ g^+ \dots$$

### A. Multiline equations

Multiline equations are obtained by using the `eqnarray` environment. Use the `\nonumber` command at the end of each line to avoid assigning a number:

$$E = mc, \quad (2)$$

$$E = mc^2, \quad (3)$$

$$E \gtrsim mc^3. \quad (4)$$

To set a multiline equation without *any* equation numbers, use the `\begin{eqnarray*}`, `\end{eqnarray*}` format:

$$\begin{aligned} \sum |M_g^{\text{viol}}|^2 &= g_S^{2n-4} (Q^2) N^{n-2} (N^2 - 1) \\ &\times \left( \sum_{i < j} \right) \left( \sum_{\text{perm}} \frac{1}{S_{12} S_{23} S_{n1}} \right) \frac{1}{S_{12}}. \end{aligned}$$

The `\label{#1}` should appear in a section heading, within an equation, or in a table or figure caption. The `\ref{#1}` command is used in the text where the citation is to be displayed. Some examples: Section I on page 1, Table I, and Fig. 1.

## III. FIGURES AND TABLES

Figures and tables are typically “floats” which means that their final position is determined by  $\text{\LaTeX}$  while the document is being typeset.  $\text{\LaTeX}$  isn’t always successful in placing

TABLE I: This is a table with three columns, the left one left-justified, the center one centered and the right one right-justified.

1	2	3
10	20	30
100	200	300

floats optimally.

Figure 1 shows a figure. It is embedded using the `figure` environment which provides both the caption and the imports the figure file.

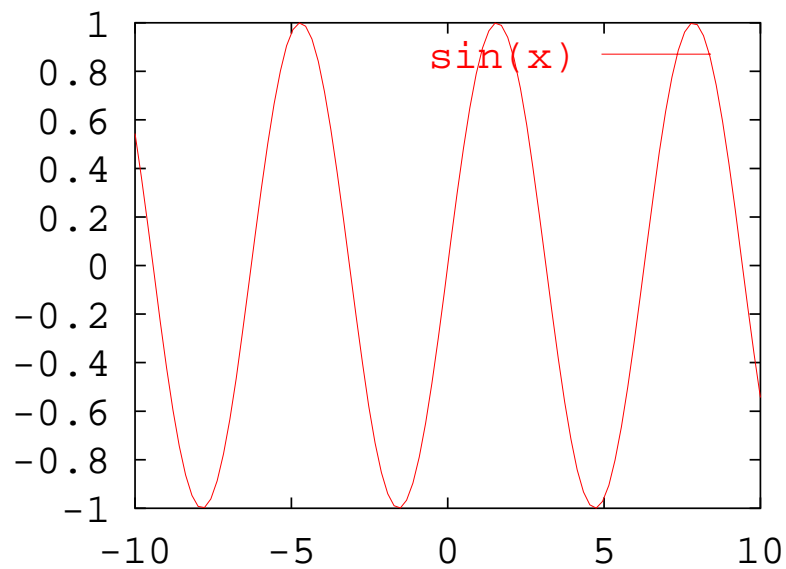


FIG. 1: This is an arbitrary figure.

Next we look at tables. See Table I.

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- [1] R.P. Feynman, Phys. Rev. **94**, 262 (1954).  
 [2] Edward Witten, hep-th/0106109.