The Title of an Article

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This article illustrates many features of a mathematics article, but we do not explain the spurious appearance of the formula $(\nabla \times F) \cdot k = z + 1$ in this abstract.

Sample Mathematics and Text

This short sample document illustrates the typeset appearance of in-line and displayed mathematics in documents. It also illustrates five levels of section headings and three kinds of lists. Finally, the document includes entries for a manual bibliography and an appendix.

In-line and Displayed Mathematics

The expression $\sum_{i=1}^{\infty} a_i$ is in-line mathematics, while the numbered equation

$$\sum_{i=1}^{\infty} a_i \tag{1}$$

is displayed and automatically numbered as equation 1.

Let H be a Hilbert space, C be a closed bounded convex subset of H, T a nonexpansive self map of C. Suppose that as $n \to \infty$, $a_{n,k} \to 0$ for each k, and $\gamma_n = \sum_{k=0}^{\infty} (a_{n,k+1} - a_{n,k})^+ \to 0$. Then for each x in C, $A_n x = \sum_{k=0}^{\infty} a_{n,k} T^k x$ converges weakly to a fixed point of T.

Two sets of LaTeX parameters govern mathematical displays.[1] The spacing above and below a display depends on whether the lines above or below are short or long, as shown in the following examples.

A short line above:

$$x^2 + y^2 = z^2$$

and a short line below.

A long line above may depend on your margins

$$\sin^2 \theta + \cos^2 \theta = 1$$

as will a long line below. This line is long enough to illustrate the spacing for mathematical displays, regardless of the margins.

Mathematics in section heads $\int_\alpha^\beta \ln t dt$

Mathematics can appear in section heads. Note that mathematics in section heads may cause difficulties in typesetting styles with running headers or table of contents entries.

Theorems, Lemmata, and Other Theorem-like Environments

A number of theorem-like environments is available. The following lemma is a well-known fact on differentiation of asymptotic expansions of analytic functions.

Lemma 1 *Let $f(z)$ be an analytic function in $\mathbb{C}_+$. If $f(z)$ admits the representation*

$$f(z) = a_0 + \frac{a_1}{z} + o\left(\frac{1}{z}\right),$$

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[1] LaTeX automatically selects the spacing depending on the surrounding line lengths.

for $z \to \infty$ inside a cone $\Gamma_\varepsilon = \{z \in \mathbb{C}_+ : 0 < \varepsilon \le \arg z \le \pi - \varepsilon\}$ then

$$a_1 = -\lim z^2 f'(z), \ z \to \infty, \ z \in \Gamma_\varepsilon. \tag{2}$$

Proof. Change z for $1/z$. Then $\Gamma_\varepsilon \to \overline{\Gamma}_\varepsilon = \{z \in \mathbb{C}_- : \overline{z} \in \Gamma_\varepsilon\}$ and

$$f(1/z) = a_0 + a_1 z + o(z). \tag{3}$$

Fix $z \in \overline{\Gamma}_\varepsilon$, and let $C_r(z) = \{\lambda \in \mathbb{C}_- : |\lambda - z| = r\}$ be a circle with radius $r = |z| \sin \varepsilon / 2$. It follows from (3) that

$$\frac{1}{2\pi i} \int_{C_r(z)} \frac{f(\lambda) \, d\lambda}{(\lambda - z)^2} = \sum_{m=0}^{1} a_m \frac{1}{2\pi i} \int_{C_r(z)} \frac{(\lambda - z_0)^m \, d\lambda}{(\lambda - z)^2} + R(z), \tag{4}$$

where for the remainder $R(z)$ we have

$$\begin{aligned}
|R(z)| &\le r^{-1} \max_{\lambda \in C_r(z)} o(|z|) = r^{-1} \max_{\lambda \in C_r(z)} |\lambda| \cdot O(|z| + r) \\
&= \frac{|z| + r}{r} \cdot O(|z| + r) = \frac{1 + \sin \varepsilon}{\sin \varepsilon} \cdot O(|z|).
\end{aligned}$$

Therefore $R(z) \to 0$ as $z \to \infty$, $z \in \overline{\Gamma}_{\varepsilon/2}$, and hence by the Cauchy theorem (4) implies

$$\frac{d}{dz} f(1/z) = a_1 + R(z) \to a_1, \text{ as } z \to \infty, \ z \in \overline{\Gamma}_{\varepsilon/2},$$

that implies (2) by substituting $1/z$ back for z. ∎

Section Headings

Use the Section tag for major sections, such as the one just above. Four additional heading levels are available, as described below.

Subsection Heading

This text appears under a subsection heading.

Subsubsection Heading

This text appears under a subsubsection heading.

Subsubsubsection Heading   This text appears under a subsubsubsection heading.

Subsubsubsubsection Heading   This text appears under a subsubsubsubsection heading.

Lists

Bullet, numbered and description list environments are available. Lists, which can extend four levels deep, look like this:

1. Numbered list item 1.

2. Numbered list item 2.

   (a) A numbered list item under a list item.

   The typeset appearance for this level is often different from the screen appearance. The typeset appearance often uses parentheses around the level indicator.

   (b) Another numbered list item under a list item.

      i. Third level numbered list item under a list item.

         A. Fourth and final level of numbered list items allowed.

- Bullet item 1.

- Bullet item 2.

   – Second level bullet item.

                ∗ Third level bullet item.

                     · Fourth and final level bullet item.

Description List Each description list item has a lead-in followed by the item. Double-click the lead-in box to enter or customize the text of the lead-in.

Bunyip Mythical beast of Australian Aboriginal legends.

References and Notes

1. The package is TTH, available at http://hutchinson.belmont.ma.us/tth/ .

2. As the mark-up of the TEX source for this document makes clear, your file should be coded in LaTeX2ε, not LaTeX 2.09 or an earlier release. Also, please use the `article` document class.

3. Among whom are the author of this document. The "real" references and notes contained herein were compiled using BIBTEX from the sample .bib file `scibib.bib`, the style package `scicite.sty`, and the bibliography style file `Science.bst`.

4. One of the equation editors we use, Equation Magic (MicroPress Inc., Forest Hills, NY; http://www.micropress-inc.com/), interprets native TEX source code and generates an equation as an OLE picture object that can then be cut and pasted directly into Word. This editor, however, does not handle LaTeX environments (such as `{array}` or `{eqnarray}`); it can interpret only TEX codes. Thus, when there's a choice, we ask that you avoid these LaTeX calls in displayed math — for example, that you use the TEX `\matrix` command for ordinary matrices, rather than the LaTeX `{array}` environment.

5. We've included in the template file `scifile.tex` a new environment, `{scilastnote}`, that generates a numbered final citation without a corresponding signal in the text. This environment can be used to generate a final numbered reference containing acknowledgments, sources of funding, and the like, per *Science* style. Along those lines, we'd like to thank readers of this document for their attention, and invite them to address any questions to Stewart Wills, at swills@aaas.org.

Fig. 1. Please do not use figure environments to set up your figures in the final (post-peer-review) draft, do not include graphics in your source code, and do not cite figures in the text using LaTeX `\ref` commands. Instead, simply refer to the figure numbers in the text per *Science* style, and include the list of captions at the end of the document, coded as ordinary paragraphs as shown in the `scifile.tex` template file. Your actual figure files should be submitted separately.