PNAS Nexus, YEAR, pp. 1–7

doi: DOI HERE
Advance Access Publication Date: Day Month Year
Paper

PAPER

Article title in sentence case

First Author,[a,*] Second Author,[b] Third Author,[c] Fourth Author[d] and Fifth Author[c, d]

[a]Department, Organization, Street, Postcode, State, Country, [b]Department, Organization, Street, Postcode, State, Country, [c]Department, Organization, Street, Postcode, State, Country and [d]Department, Organization, Street, Postcode, State, Country
[*]To whom correspondence should be addressed: email-id.com
FOR PUBLISHER ONLY Received on Date Month Year; accepted on Date Month Year

Abstract

Abstracts must be able to stand alone and so cannot contain citations to the paper's references, equations, etc. An abstract must consist of a single paragraph and be concise. Because of online formatting, abstracts must appear as plain as possible.

Key words: keyword1, keyword2, keyword3, keyword4

Introduction

This is an example for first level head - section head

Once data are disseminated, whatever contractual or other obligations are placed on those receiving the data, the data are effectively out of a data providers' control. Data providers must be certain that the data disseminated do not provide a risk of disclosure necessitating a reduction in the detail available. Data providers must be certain that the data disseminated do not provide a risk of disclosure necessitating a reduction in the detail available, or they are constrained to using a resource intensive auditing regime, and are likely to discover any data misuse only after it has happened (refer Section 5).

This is an example for second level head - subsection head

Once data are disseminated, whatever contractual or other obligations are placed on those receiving the data, the data are effectively out of a data providers' control. Data providers must be certain that the data disseminated do not provide a risk of disclosure necessitating a reduction in the detail available, or they are constrained to using a resource intensive auditing regime, and are likely to discover any data misuse only after it has happened.

This is an example for third level head - subsubsection head
Once data are disseminated, whatever contractual or other obligations are placed on those receiving the data, the data are effectively out of a data providers' control. Data providers must be certain that the data disseminated do not provide a risk of disclosure necessitating a reduction in the detail available, or they are constrained to using a resource intensive auditing regime, and are likely to discover any data misuse only after it has happened.

This is an example for fourth level head - paragraph head
Once data are disseminated, whatever contractual or other obligations are placed on those receiving the data, the data are effectively out of a data providers' control. The United Kingdom has a long tradition of safe data use by researchers. The United Kingdom has a long tradition of safe data use by researchers.

This is an example for first level head

This is an example for second level head - subsection head

This is an example for third level head - subsubsection head
In the 50 years that the UK Data Archive has been making data available for social and economic research, there have been no damaging disclosures of personal information by academic researchers. While increasing use of detailed and sometimes sensitive data can contribute valuable insights for targeting policies, we cannot be complacent. In order to support our policy needs and continue to use data safely and effectively, we need a research infrastructure that data confidentiality while enabling researchers to undertake innovative research.

This is an example for fourth level head - paragraph head
A first step toward protecting sensitive data is to keep control of it, to disseminate access, not data. Data providers

internationally are increasing, moving toward systems in which researchers remotely accessed.

Equations

Equations in LaTeX can either be inline or on-a-line by itself. For inline equations use the `$...$` commands. Eg: The equation $H\psi = E\psi$ is written via the command `$H \psi = E \psi$`.

For on-a-line by itself equations (with auto generated equation numbers) one can use the equation or eqnarray environments:

$$\|\tilde{X}(k)\|^2 \leq \frac{\sum_{i=1}^{p}\left\|\tilde{Y}_i(k)\right\|^2 + \sum_{j=1}^{q}\left\|\tilde{Z}_j(k)\right\|^2}{p+q}. \tag{1}$$

where,

$$D_\mu = \partial_\mu - ig\frac{\lambda^a}{2}A^a_\mu$$
$$F^a_{\mu\nu} = \partial_\mu A^a_\nu - \partial_\nu A^a_\mu + gf^{abc}A^b_\mu A^a_\nu \tag{2}$$

Notice the use of `\nonumber` in the align environment at the end of each line, except the last, so as not to produce equation numbers on lines where no equation numbers are required. The `\label{}` command should only be used at the last line of an align environment where `\nonumber` is not used.

$$Y_\infty = \left(\frac{m}{\text{GeV}}\right)^{-3}\left[1 + \frac{3\ln(m/\text{GeV})}{15} + \frac{\ln(c_2/5)}{15}\right] \tag{3}$$

The class file also supports the use of `\mathbb{}`, `\mathscr{}` and `\mathcal{}` commands. As such `\mathbb{R}`, `\mathscr{R}` and `\mathcal{R}` produces $\mathbb{R}$, $\mathscr{R}$ and $\mathcal{R}$ respectively.

Tables

Tables can be inserted via the normal table and tabular environment. To put footnotes inside tables one has to 12pt use the additional "tablenotes" environment enclosing the tabular environment. The footnote appears just below the table itself (refer Tables 1 and 2).

```
\begin{table}[t]
\begin{center}
\begin{minipage}{<width>}
\caption{<table-caption>\label{<table-label>}}%
\begin{tabular}{@{}llll@{}}
\toprule
column 1 & column 2 & column 3 & column 4\\
\midrule
row 1 & data 1 & data 2          & data 3 \\
row 2 & data 4 & data 5$^{1}$ & data 6 \\
row 3 & data 7 & data 8      & data 9$^{2}$\\
\botrule
\end{tabular}
\begin{tablenotes}%
\item Source: Example for source.
\item[$^{1}$] Example for a 1st table footnote.
\item[$^{2}$] Example for a 2nd table footnote.
\end{tablenotes}
\end{minipage}
\end{center}
\end{table}
```

Table 1. Caption text

column 1	column 2	column 3	column 4
row 1	data 1	data 2	data 3
row 2	data 4	data 5[1]	data 6
row 3	data 7	data 8	data 9[2]

Source: This is an example of table footnote this is an example of table footnote this is an example of table footnote this is an example of table footnote this is an example of table footnote

[1]Example for a first table footnote.

[2]Example for a second table footnote.

Fig. 1. This is a widefig. This is an example of long caption this is an example of long caption this is an example of long caption this is an example of long caption

Lengthy tables which doesn't fit in textwidth should be set as rotated table. For this, we need to use `\begin{sidewaystable}... \end{sidewaystable}` instead of `\begin{table}... \end{table}` environment.

Figures

As per the LaTeX standards one has to use eps images for `latex` compilation and `pdf/jpg/png` images for `pdflatex` compilation. This is one of the major difference between `latex` and `pdflatex`. The images should be single page documents. The command for inserting images for `latex` and `pdflatex` can be generalized. The package used to insert images in `latex/pdflatex` is the graphicx package. Figures can be inserted via the normal figure environment as shown in the below example:

```
\begin{figure}[t]
        \centering\includegraphics{<eps-file>}
        \caption{<figure-caption>}
        \label{<figure-label>}
\end{figure}
```

Test text here.

For sample purpose, we have included the width of images in the optional argument of `\includegraphics` tag. Please ignore this. Lengthy figures which doesn't fit in textwidth should be set as rotated mode. For rotated figures, we need to use `\begin{sidewaysfigure} ... \end{sidewaysfigure}` instead of `\begin{figure} ... \end{figure}` environment.

Algorithms, program codes and listings

Packages `algorithm`, `algorithmicx` and `algpseudocode` are used for setting algorithms in latex. For this, one has to use the below format:

```
\begin{algorithm}
\caption{<alg-caption>}\label{<alg-label>}
\begin{algorithmic}[1]
. . .
\end{algorithmic}
\end{algorithm}
```

Table 2. Example of a lengthy table which is set to full textwidth.

Project	Element 1[1]			Element 2[2]		
	Energy	σ_{calc}	σ_{expt}	Energy	σ_{calc}	σ_{expt}
Element 3	990 A	1168	1547 ± 12	780 A	1166	1239 ± 100
Element 4	500 A	961	922 ± 10	900 A	1268	1092 ± 40

Note: This is an example of table footnote this is an example of table footnote this is an example of table footnote this is an example of table footnote this is an example of table footnote

[1]Example for a first table footnote.

[2]Example for a second table footnote.

Fig. 2. This is a widefig. This is an example of long caption this is an example of long caption this is an example of long caption this is an example of long caption

Algorithm 1 Calculate $y = x^n$

Require: $n \geq 0 \vee x \neq 0$
Ensure: $y = x^n$
$y \Leftarrow 1$
if $n < 0$ **then**
  $X \Leftarrow 1/x$
  $N \Leftarrow -n$
else
  $X \Leftarrow x$
  $N \Leftarrow n$
end if
while $N \neq 0$ **do**
  if N is even **then**
    $X \Leftarrow X \times X$
    $N \Leftarrow N/2$
  else[N is odd]
    $y \Leftarrow y \times X$
    $N \Leftarrow N - 1$
  end if
end while

We need to refer above listed package documentations for more details before setting `algorithm` environment. To set program codes, one has to use `program`, package. We need to use `\begin{program} ... \end{program}` environment to set program codes. A fast exponentiation procedure:

Similarly, for `listings`, one has to use `listings` package. `\begin{lstlisting} ... \end{lstlisting}` environment is used to set environments similar to `verbatim` environment. Refer `lstlisting`, package documentation for more details on this.

```
begin
{ do nothing }
end;
Write('Case insensitive ');
Write('Pascal keywords.');
```

Cross referencing

Environments such as figure, table, equation, align can have a label declared via the `\label{#label}` command. For figures and table environments one should use the `\label{}` command inside or just below the `\caption{}` command. One can then use the `\ref{#label}` command to cross-reference them. As an example, consider the label declared for Figure 1 which is `\label{fig1}`. To cross-reference it, use the command `Figure \ref{fig1}`, for which it comes up as "Figure 1".

Details on reference citations

With standard numerical .bst files, only numerical citations are possible. With an author-year .bst file, both numerical and author-year citations are possible.

If author-year citations are selected, `\bibitem` must have one of the following forms:

```
\bibitem[Jones et al.(1990)]{key}...
\bibitem[Jones et al.(1990)Jones,
                Baker, and Williams]{key}...
\bibitem[Jones et al., 1990]{key}...
\bibitem[\protect\citeauthoryear{Jones,
                Baker, and Williams}
                {Jones et al.}{1990}]{key}...
\bibitem[\protect\citeauthoryear{Jones et al.}
                {1990}]{key}...
\bibitem[\protect\astroncite{Jones et al.}
                {1990}]{key}...
\bibitem[\protect\citename{Jones et al., }
                1990]{key}...
\harvarditem[Jones et al.]{Jones, Baker, and
                Williams}{1990}{key}...
```

This is either to be made up manually, or to be generated by an appropriate .bst file with BibTeX. Then,

```
                    Author-year mode
                        || Numerical mode
\citet{key} ==>>  Jones et al. (1990)
                        || Jones et al. [21]
```

Table 3. Tables which are too long to fit, should be written using the "sidewaystable" environment as shown here

Projectile	Element 1[1]			Element[2]		
	Energy	σ_{calc}	σ_{expt}	Energy	σ_{calc}	σ_{expt}
Element 3	990 A	1168	1547 ± 12	780 A	1166	1239 ± 100
Element 4	500 A	961	922 ± 10	900 A	1268	1092 ± 40

Note: This is an example of table footnote this is an example of table footnote this is an example of table footnote this is an example of table footnote this is an example of table footnote

[1]This is an example of table footnote

Fig. 3. This is an example for sideways figure. This is an example of long caption this is an example of long caption this is an example of long caption this is an example of long caption

```
\citep{key} ==>> (Jones et al., 1990) || [21]
```

Multiple citations as normal:

```
\citep{key1,key2} ==> (Jones et al., 1990;
                       Smith, 1989)||[21,24]
       or (Jones et al., 1990, 1991)||[21,24]
       or (Jones et al., 1990a,b)   ||[21,24]
```

`\cite{key}` is the equivalent of `\citet{key}` in author-year mode and of `\citep{key}` in numerical mode. Full author lists may be forced with `\citet*` or `\citep*`, e.g.

```
\citep*{key} ==>> (Jones, Baker, and Mark, 1990)
```

Optional notes as:

```
\citep[chap. 2]{key}     ==>>
       (Jones et al., 1990, chap. 2)
\citep[e.g.,][]{key}     ==>>
       (e.g., Jones et al., 1990)
\citep[see][pg. 34]{key} ==>>
       (see Jones et al., 1990, pg. 34)
```

(Note: in standard LaTeX, only one note is allowed, after the ref. Here, one note is like the standard, two make pre- and post-notes.)

```
\citealt{key}   ==>> Jones et al. 1990
\citealt*{key}  ==>> Jones, Baker, and
                     Williams 1990
\citealp{key}   ==>> Jones et al., 1990
\citealp*{key}  ==>> Jones, Baker, and
                     Williams, 1990
```

Additional citation possibilities (both author-year and numerical modes)

```
\citeauthor{key}       ==>> Jones et al.
\citeauthor*{key}      ==>> Jones, Baker, and
                            Williams
\citeyear{key}         ==>> 1990
\citeyearpar{key}      ==>> (1990)
\citetext{priv. comm.} ==>> (priv. comm.)
\citenum{key}          ==>> 11 [non-superscripted]
```

Note: full author lists depends on whether the bib style supports them; if not, the abbreviated list is printed even when full requested.
For names like della Robbia at the start of a sentence, use

```
\Citet{dRob98}      ==>> Della Robbia (1998)
\Citep{dRob98}      ==>> (Della Robbia, 1998)
\Citeauthor{dRob98} ==>> Della Robbia
```

The following is an example for `\cite{...}`: [11]. Another example for `\citep{...}`: [1, 3, 7, 9, 8, 4]. Sample cites here [5, 2] and [10], [13], [6, 14, 12].

Lists

List in LaTeX can be of three types: numbered, bulleted and unnumbered. “enumerate” environment produces numbered list, “itemize” environment produces bulleted list and “unlist” environment produces unnumbered list. In each environments, new entry is added via the `\item` command.

1. This is the 1st item
2. Enumerate creates numbered lists, itemize creates bulleted lists and unnumerate creates unnumbered lists.
   a. Second level numbered list. Enumerate creates numbered lists, itemize creates bulleted lists and description creates unnumbered lists.
   b. Second level numbered list. Enumerate creates numbered lists, itemize creates bulleted lists and description creates unnumbered lists.
      (i) Third level numbered list. Enumerate creates numbered lists, itemize creates bulleted lists and description creates unnumbered lists.
      (ii) Third level numbered list. Enumerate creates numbered lists, itemize creates bulleted lists and description creates unnumbered lists.
   c. Second level numbered list. Enumerate creates numbered lists, itemize creates bulleted lists and description creates unnumbered lists.
   d. Second level numbered list. Enumerate creates numbered lists, itemize creates bulleted lists and description creates unnumbered lists.
3. Enumerate creates numbered lists, itemize creates bulleted lists and description creates unnumbered lists.
4. Numbered lists continue.

List in LaTeX can be of three types: enumerate, itemize and description. In each environments, new entry is added via the `\item` command.

- First level bulleted list. This is the 1st item
- First level bulleted list. Itemize creates bulleted lists and description creates unnumbered lists.
  – Second level dashed list. Itemize creates bulleted lists and description creates unnumbered lists.
  – Second level dashed list. Itemize creates bulleted lists and description creates unnumbered lists.
  – Second level dashed list. Itemize creates bulleted lists and description creates unnumbered lists.
- First level bulleted list. Itemize creates bulleted lists and description creates unnumbered lists.
- First level bulleted list. Bullet lists continue.

Example for unnumbered list items:

Sample unnumberd list text. Sample unnumberd list text. Sample unnumberd list text. Sample unnumberd list text. Sample unnumberd list text.

Sample unnumberd list text. Sample unnumberd list text. Sample unnumberd list text.

sample unnumberd list text. Sample unnumberd list text. Sample unnumberd list text. Sample unnumberd list text. Sample unnumberd list text. Sample unnumberd list text. Sample unnumberd list text.

Examples for theorem like environments

For theorem like environments, we require `amsthm` package. There are three types of predefined theorem styles exists - `thmstyleone`, `thmstyletwo` and `thmstylethree`

`thmstyleone`	Numbered, theorem head in bold font and theorem text in italic style
`thmstyletwo`	Numbered, theorem head in roman font and theorem text in italic style
`thmstylethree`	Numbered, theorem head in bold font and theorem text in roman style

Theorem 1 (Theorem subhead) *Example theorem text. Example theorem text. Example theorem text. Example theorem text. Example theorem text. Example theorem text. Example theorem text. Example theorem text. Example theorem text. Example theorem text. Example theorem text.*

Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue.

Proposition 2 *Example proposition text. Example proposition text. Example proposition text. Example proposition text. Example proposition text. Example proposition text. Example proposition text. Example proposition text. Example proposition text. Example proposition text.*

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante.

Example 1 *Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem.*

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante.

Remark 1 *Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem.*

Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. In hac habitasse platea dictumst.

Definition 1 (Definition sub head) Example definition text. Example definition text. Example definition text. Example definition text. Example definition text. Example definition text. Example definition text.

Apart from the above styles, we have `\begin{proof} ... \end{proof}` environment - with proof head in italic style and body text in roman font with an open square at the end of each proof environment.

Proof Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. □

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi.

Proof of Theorem 1 Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. Example for proof text. □

For quote environment, one has to use `\begin{quote}...\end{quote}`

> Quoted text example. Aliquam porttitor quam a lacus. Praesent vel arcu ut tortor cursus volutpat. In vitae pede quis diam bibendum placerat. Fusce elementum convallis neque. Sed dolor orci, scelerisque ac, dapibus nec, ultricies ut, mi. Duis nec dui quis leo sagittis commodo.

Donec congue. Maecenas urna mi, suscipit in, placerat ut, vestibulum ut, massa. Fusce ultrices nulla et nisl (refer Figure 3). Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Etiam ligula arcu, elementum a, venenatis quis, sollicitudin sed, metus. Donec nunc pede, tincidunt in, venenatis vitae, faucibus vel (refer Table 3).

Conclusion

Some Conclusions here.

Acknowledgments

The authors thank the anonymous reviewers for their valuable suggestions.

Supplementary Material

Supplementary material is available at PNAS Nexus online.

Funding

This work is supported in part by funds from the National Science Foundation (NSF: # 1636933 and # 1920920).

Author contributions statement

Must include all authors, identified by initials, for example: S.R. and D.A. conceived the experiment(s), S.R. conducted the experiment(s), S.R. and D.A. analysed the results. S.R. and D.A. wrote and reviewed the manuscript.

Previous presentation

These results were previously presented at [conference, date].

Preprints

A preprint of this article is published at [DOI].

Data availability

The data underlying this article are available in [repository name, eg, the GenBank Nucleotide Database] at [URL], and can be accessed with [unique identifier, eg, accession number, deposition number].

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