LaTeX Style Guide for the *Journal of Integer Sequences*

Version 1.41

Authors of papers in the *Journal of Integer Sequences* should write their papers in English. If English is not your native language, consider asking a native-speaking colleague or local native speaker to help proofread your paper. If you have no access to a native speaker, you can (for a fee) have people read and edit your paper online. For example, visit `http://webshop.elsevier.com/languageservices/languageediting/`.

Authors of papers in the *Journal of Integer Sequences* should prepare their papers in LaTeX. We do *not* recommend use of add-on packages such as Scientific Workplace. Please observe the following guidelines.

1 LaTex advice

Please avoid the use of special-purpose macros whenever possible. Strip your paper of references to any packages and definitions that you do not actually use. (Do *not* just comment them out.) Remove all commented lines.

It may be worthwhile to download the latex file for a paper already published in the journal and model your paper on it. Do not use this file as a model.

Do *not* include a date in the title page of your paper.

Use the default (Computer Modern) font. Do not use Times Roman or other fonts.

Acknowledgments should be in a *separate, numbered section* at the end of the paper.

Avoid the use of PicTeX; it uses too many registers and is often not compatible with packages we use to publish your paper. If you absolutely have to use it, consider the use of `pictexwd` instead.

2 Common Grammatical Errors

Please **be sure to run your paper through a spell-checker before submission!** Our Journal uses American spellings.

1. Avoid the passive voice. Instead of saying "In [1] it is shown that all primes > 2 are odd", say "Smith [1] showed that all primes > 2 are odd".

2. Avoid use of weak constructions such as “this number” or “it”. For example, instead of saying

   Wrong: Let x be a prime. We now square this number.

   Right: Let x be a prime. We now square x.

3. Avoid the use of constructions, such as “don’t”, “can’t”, “isn’t”, etc.

   Wrong: The number 7 is prime, since it isn’t divisible by $2, 3, 4, 5$, or 6.

   Right: The number 7 is prime, since it is not divisible by $2, 3, 4, 5$, or 6.

4. The word “precise” is not a verb in English.

   Wrong: We now precise the connection between α and β.

   Right: We now make the connection between α and β more precise.

5. Use the word “expansion”, not “development”.

   Wrong: Let $[a_0, a_1, \ldots]$ be the continued fraction development of x.

   Right: Let $[a_0, a_1, \ldots]$ be the continued fraction expansion of x.

6. Use “associate with”, not “associate to”.

   Wrong: We now associate x to y.

   Right: We now associate x with y.

7. Use “root” for equations, and “zero” for polynomials.

   Wrong: Let α be the positive root of $x^2 - x - 1$.

   Right: Let α be the positive zero of $x^2 - x - 1$.

   Right: Let α be the positive root of $x^2 - x - 1 = 0$.

8. Use the term “pair”, not “couple”, to denote two objects.

   Wrong: Let (α, β) be a couple of real numbers.

   Right: Let (α, β) be a pair of real numbers.

9. Avoid run-on sentences. A run-on sentence is one that expresses two thoughts in a single phrase. Fix by separating into two or more sentences, or by connecting with a semi-colon or a conjunction such as “and”. More information can be found in the Wikipedia article on run-on sentences.

   Wrong: Let Σ be a finite alphabet, Σ^* denote the set of all finite words over Σ.

   Right: Let Σ be a finite alphabet, and let Σ^* denote the set of all finite words over Σ.

   Wrong: Let p be a prime number ≥ 3, then $2^p \equiv 2 \pmod{p}$.

   Right: Let p be a prime number ≥ 3. Then $2^p \equiv 2 \pmod{p}$.

10. Avoid starting sentences or phrases with notation.

    Wrong: f maps integers to real numbers.

    Right: The function f maps integers to real numbers.

11. Avoid treating citation numbers as objects of prepositions. Treat them syntactically like footnotes.

    Wrong: In [1] it is proved that e is irrational.

    Wrong: The article [1] proves that e is irrational.

    Right: Euler [1] proved that e is irrational.

12. Words like "notation", "work", and "information" are mass nouns in English, and as such, rarely appear in the plural.

    Wrong: We now introduce some definitions and notations.

    Right: We now introduce some definitions and notation.

    Wrong: You can find many works on continued fractions in the literature.

    Right: You can find many papers on continued fractions in the literature.

    The Wikipedia article on mass nouns contains more information.

3 Common punctuation errors

- Use colons properly. Colons should not immediately follow verbs.

  Wrong: The resulting equation is:
  $$x = y^2.$$

  Right: The resulting equation is
  $$x = y^2.$$

  Right: The resulting equation is as follows:
  $$x = y^2.$$

- Always put a comma after "i.e." and "e.g.".

  Wrong: Let x be a minimal element i.e. an element such that if $y \leq x$ then $y = x$.

  Wrong: Let x be a prime e.g. 2.

  Right: Let x be a minimal element, i.e., an element such that if $y \leq x$ then $y = x$.

  Right: Let x be a prime, e.g., 2.

- Avoid excessive and inappropriate capitalization.

  Wrong: We let $H(x)$ denote the Hankel Transform of x.

  Right: We let $H(x)$ denote the Hankel transform of x.

  Wrong: Now we use the Cayley-Hamilton Theorem.

  Right: Now we use the Cayley-Hamilton theorem.

  Wrong: The result follows by the Prime Number Theorem.

  Right: The result follows by the prime number theorem.

  Wrong: The Fibonacci Numbers are numbers satisfying the recurrence...

  Right: The Fibonacci numbers are numbers satisfying the recurrence...

  Wrong: We use the Euclidean Algorithm to compute $\gcd(m, n)$.

  Right: We use the Euclidean algoritm to compute $\gcd(m, n)$.

4 Common LaTeX Errors

This section lists a few of the common errors made when preparing papers in LaTeX.

4.1 Blackboard Bold

For blackboard bold symbols such as $\mathbb{Z}$, $\mathbb{Q}$, $\mathbb{R}$, $\mathbb{C}$, use `\mathbb{Z}`, for example. You may need to include the command `\usepackage{amssymb}`.

4.2 Variables and expressions

Usually, variables such as x, y, n, etc., should appear in the italic font. This will occur automatically if you remember to enclose your equations (even references to a single variable) in dollar signs or double-dollar signs, or use a latex equation environment.

Wrong: `Let n be the number of integers in the list.`
Right: `Let $n$ be the number of integers in the list.`

If a variable or expression ends a sentence, do *not* include the period inside the `$$`; doing so messes up the spacing.

Right: `And so the number of terms is $n$.`
Wrong: `And so the number of terms is $n.$`

4.3 Spacing

Please try not to include any commands that tweak the spacing (such as `\\`, `\noindent`, `\newpage`, `\bigskip`, `\pagebreak`, `\linebreak`, etc.) since when your paper is formatted for final publication, the page breaks and spacing will probably be quite different from what you currently see. The proper way to separate paragraphs is with a single blank line, and *not* with `\\` at the end of the line.

Don't forget that **if a period follows a lower-case letter and does not end a sentence**, then you must escape the period by putting a \ and then a space immediately after it. For example:

Right: `We use a flern (cf.\ the previous theorem) in the proof.`
Wrong: `We use a flern (cf. the previous theorem) in the proof.`

4.4 Accents

Be careful to use the proper accents. The name Erdős, for example, uses a Hungarian accent, and should be formatted with `\H`. The name Sierpiński needs an accent on the "n". Create accents using the LaTeX abbreviations; do *not* use special UNICODE characters, keyboard shortcuts, or other exotic character sets to make them.

4.5 Floor and Ceiling

Be sure to use the built-in TEX commands `\lfloor`, `\rfloor` and `\lceil`, `\rceil`, not square brackets, when using these integer functions.

4.6 Min and Max

Be sure to use the built-in TEX commands `\min` and `\max` when using these functions.

4.7 Gcd and Lcm

Be sure to use the built-in TEX command `\gcd` for greatest common divisor. Don't write (a, b) for the gcd of a and b; write $\gcd(a, b)$ instead. For lcm, you will have to define your own command so that it appears in the roman font. The best way to do this is to use the command

```
\DeclareMathOperator{\lcm}{lcm}
```

4.8 Binomial coefficients

Use `\choose` for binomial coefficients. Do not use the latex array environment.

4.9 Multi-letter functions

As a general rule, all multi-letter functions such as $\sin, \cos, \tan,$, etc., should appear in the roman font. For these functions you can use the built-in TeX commands `\sin, \cos, \tan`, etc., but for others (e.g., Li for the logarithmic integral) you may have to define your own commands. Again, the best way to do this is, e.g.,

```
\DeclareMathOperator{\Li}{Li}
```

4.10 Parentheses

Use parentheses for grouping, not square brackets or braces. You can get different sizes of parentheses using, for example, `\bigl(` and `\bigr)`.

4.11 Mod

Observe the distinction between the use of "mod" as a function of two arguments, mapping $a \bmod b$ to the least non-negative residue of a modulo b, and "mod" as an equivalence relation. For the first, use the TeX command `\bmod`. For the second, use the TeX command `\pmod` for displayed equations *only*; for in-line equations write something like

```
$x \equiv a$ (mod $b$),
```

which typesets as follows: $x \equiv a$ (mod b). Do not use notation like $x \equiv y\ [p]$.

4.12 Quote marks

Do not enclose words in ordinary quotation marks `"like this"`. This results in the following ugly output:

”like this”

Instead, use the left-quote and right-quote symbols, ` ``like this'' `, which gives the correct

“like this” .

4.13 Sequences

Use parentheses, not braces, to denote sequences. For example, $(F_n)_{n\geq 0}$ is the correct way to write the Fibonacci sequence.

4.14 Proper use of `\ldots` and `\cdots`

Be sure to use `\ldots` and `\cdots` properly. The general rule is as follows: you should use `\ldots` if the center of mass of the items on either side is below the middle of the line — for example, if the items on either side are commas. You should use `\cdots` if the center of mass of the items on either side is in the middle of the line — for example, if the items on either side are alphabet symbols. For example:

Wrong: Consider the product $a_1a_2\ldots a_n$. (Here we used `\ldots`.)
Right: Consider the product $a_1a_2\cdots a_n$. (Here we used `\cdots`.)

Wrong: Consider the sequence $a_1, a_2, \cdots, a_n$. (Here we used `\cdots`.)
Right: Consider the sequence $a_1, a_2, \ldots, a_n$. (Here we used `\ldots`.)

Under *no* circumstances should you ever write "...". Use the appropriate dots command instead.

4.15 Proper punctuation of case statements

Please punctuate case statements as follows:

$$f(x) = \begin{cases} 1, & \text{if } x \text{ is irrational;} \\ 0, & \text{otherwise.} \end{cases}$$

Do *not* use the `array` environment to do case statements. Use `\begin{cases}...\end{cases}`. Within a case statement, use `\text{...}`, not `\mathrm{...}`.

5 Title page

The title page should include the title of your article (capitalized), and the complete address and affiliations, including academic department and e-mail address, for all authors. (By "capitalized" we do not mean you should capitalize every letter of every word; just the first letter of all nontrivial words.) Write your name with the surname *last*; if it is unclear which is your first name and which is your surname, please indicate this in a comment.

6 Definitions

Terms that are being defined should be in a special font, such as italic or slant.

For example,

A *flern* is a 3-dimensional hypersquare.

Avoid introducing new terms and notation when there are already accepted equivalents widely in use in the mathematical community. For example, for the Fibonacci numbers, you should use the notation F_n, and the numbers defined by $F_0 = 0$, $F_1 = 1$, $F_n = F_{n-1} + F_{n-2}$ for $n \geq 2$.

7 People

When referring to people, **use their last name only**, unless additional information is required to disambiguate. If you *do* include initials, make sure there is a space between each initial and between the initials and the name.

Right: Euler proved that e is irrational.
Wrong: L. Euler proved that e is irrational.

Right: J. R. Smith
Wrong: J.R. Smith
Wrong: J R Smith
Wrong: John R Smith

8 Theorems

Use the `\begin{theorem}` ... and `\end{theorem}` environments for theorems, lemmas, propositions, etc. Theorems should be numbered. Refer to theorems, lemmas, propositions, sections, equations, tables etc. using labels; do *not* hard-code references to them. When you refer to theorems, definitions, propositions, and so forth, be sure to capitalize the word Theorem (resp., Definition, Proposition, etc.) if it is attached to a reference label (number), and not otherwise.

Do not put space characters in labels!
Right: We now use Theorem 4.
Wrong: We now use theorem 4.
Right: We now use a previous theorem.
Wrong: We now use a previous Theorem.

To get proper definitions, use the `\usepackage{amsthm}` command.

9 Equations

Not all equations need to be numbered. If you number an equation, use a label and then refer to the label using `(\ref{eq1})` or something similar. Do not use things like (*) to number equations.

10 Definitions, Examples, and Remarks

All definitions, examples, and remarks should be stated in the roman font, except (of course) for any mathematical symbols. You can use the following code as an example.

```
\theoremstyle{definition}
\newtheorem{defn}{Definition}
```

11 Proofs

Use the commands `\begin{proof}` and `\end{proof}` to delimit proofs. These are available in the `amsthm` package mentioned above.

12 Tables

Tables should be **centered** on the page, using the `center` environment. Each table should have a number.

13 Introduction

Papers should have an introductory section that provides motivation and history of the problems discussed.

14 Abstract

Every paper should have a short abstract of 50 to 200 words. The abstract should be written in the present tense, and should be free of symbols and equations to the extent it is possible. **Avoid the passive voice in abstracts, wherever reasonable.**

The abstract should be an independent entity and should stand on its own. For example, it *should not* contain citations to the bibliography, or references to the numbers of equations, theorems, or sections of the paper. It should not contain numbered equations itself.

When referring to other work in the abstract, you can refer to author's names, but avoid mentioning years, journal names, or other information.

15 Sequence Numbers

Be sure to include sequence numbers from Sloane's online *Encyclopedia of Integer Sequences* for all sequences you discuss in your paper. The list of all such sequences should be summarized at the end of your paper, sorted in ascending order. If the sequences do not exist in the *Encyclopedia*, please submit them to `www.oeis.org` and record the A-numbers assigned, and add those to your paper.

16 Citations

Use citations syntactically like footnotes, not as objects of prepositions. Avoid saying things like "In [1] we find the following result." Instead, say "Jones [1] proved the following result." Use the LaTeX command `\cite`; do *not* hard-code references to the bibliography.

If you cite a paper with many authors, you can use "et al.", but do not put it in italics and use the first author's name.

In the bibliography, if the author has two initials, be sure to place a space between the two initials.

Wrong: N.J.A. Sloane
Right: N. J. A. Sloane

Two authors should be separated with "and":
Wrong: J. Smith, D. Jones
Right: J. Smith and D. Jones

Three or more authors should be separated with the "Oxford comma".
Right: J. Smith, D. Jones, and Z. Xu
Wrong: J. Smith, D. Jones and Z. Xu

When simultaneously citing multiple references, use syntax similar to `\cite{ref1,ref2,ref3}` to combine all references in a single pair of brackets; do *not* write `\cite{ref1}, \cite{ref2}, \cite{ref3}`.

When citing a theorem or page number in another work, say `\cite[p.\ 123]{ref1}` or something similar. Note in particular the backslash and space after the dot. This is needed because LaTeX assumes that a dot following a lowercase letter indicates the end of a sentence, and hence inserts extra space.

Please use the following examples when preparing citations. Pay careful attention to punctuation and the use of roman, italic, and bold fonts. In particular, notice that page ranges should be separated by two hyphens in LaTeX: write `123--145`, not `123-145`.

Please use the standard *Mathematical Reviews* abbreviations for journal names, with the exception that for particularly obscure journals you may provide the entire name.

The *Mathematical Reviews* journal abbreviation list can be found here:

`http://www.ams.org/msnhtml/serials.pdf`

Do not include citations to reviews of the articles, such as those appearing in *Zentralblatt* or *Math. Reviews*.

Avoid references to secondary sources, such as Wikipedia, unless there is really no alternative.

16.1 Article citation

1. J. Chan and F. E. Smith, An article about Chan-Smith numbers, *J. of Chan-Smith Numbers* **13** (1998), 123–124.

Provide the volume, but **not** the issue number, unless the issue number is required to uniquely specify the paper. Note that words in article titles should *not* be capitalized, with the following exceptions: the first word, proper nouns, and German nouns. The journal name should be in italics; the volume number should be in bold. Do not use "pp." to provide page numbers for articles. Use `--` for page ranges.

16.2 Book citation

2. A. Alces, *Introduction to Moose Theory*, Springer, 1995.

Book titles should be in italics. Note that words in book titles should be capitalized, with the exception of very short unimportant words, such as “to”, “of”, “and”, etc. Do not include the ISBN number. It is not necessary to give the place of publication unless it is a very rare or hard-to-find book.

If you cite a particular theorem or page or section inside a book, then use the bibliography to list the book information *only*. When you cite it, however, you can use syntax like `\cite[Thm.\ 2.3, p.\ 45]{Alces}` to get something like [17, Thm. 2.3, p. 45].

16.3 Article in Conference Proceedings or Book

3. B. Franklin, The public library as an aid to research, in G. Washington and T. Jefferson, eds., *Public Libraries in the United States*, Addison-Wesley, 2001, pp. 16–32.

4. P. Flajolet, How to count, in *Automata, Languages, and Programming: Proc. ICALP 1990*, Lect. Notes in Comp. Sci., Vol. 443, Springer, 1991, pp. 220–234.

Capitalize the name of the book, but *not* the paper you are referring to in the book. Note that here, unlike the case of a journal article, the abbreviation “pp.” is used.

16.4 Unpublished Material or Material on the Web

5. B. Obama, G. Bush, and W. J. Clinton, Combinatorial reasoning in American elections, preprint, `http://www.barackobama.com/combin.pdf`.

6. J. Schmoe, Pattern avoidance, preprint, `http://arxiv.org/abs/1111.2222`.

You should use the command `\url` to specify the URL of electronic manuscripts. (This command is available in the `hyperref` package.) Do *not* use syntax like `arXiv:1357.2468`.

Note that the correct URL for the Online Encyclopedia of Integer Sequences is `http://oeis.org`.

17 Other Issues

All sections of your paper should be numbered. Do *not* hard-code references to section numbers; give each section a label and refer to it.

Please be sure that your paper contains a list of *key words and phrases* and the appropriate *2000 Mathematics Subject Classifications*. The key words should be in the singular (e.g., write “Fibonacci number” and not “Fibonacci numbers”.) A list of all the subject classifications can be found at `http://www.ams.org/msnhtml/classification.pdf`. **Provide only one classification as primary** and any additional ones as secondary.

Avoid starting a line of your file with the word “From”. Many mailers insert a > character in such lines, causing a question mark to appear in your text. If you must start a line of the file with the word “From”, you can insert a space first.

Do not include any UNICODE special characters in your file. These can arise, for example, from cutting and pasting references from the web. Check to make sure, for example, that dashes are represented by `--` or `---` and not special UNICODE characters.