

# Davey’s DOs and DON’Ts—a checklist for authors of papers for Algebra Universalis

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ABSTRACT. For many years, the author has checked the L<sup>A</sup>T<sub>E</sub>X of every paper accepted by *Algebra Universalis*. Here you will find a list of the most common errors he has encountered. Authors submitting L<sup>A</sup>T<sub>E</sub>X files to Algebra Universalis should use this as a checklist before submitting their file.

Below is a list of DOs and DON’Ts for authors who are preparing L<sup>A</sup>T<sub>E</sub>X files for submission to Algebra Universalis. This list should be read in conjunction with the AU Sample Article (`AUart.tex` and `AUart.pdf`), which contains a number of other DOs and DON’Ts.

## 1. Files

- (1) Submit a single L<sup>A</sup>T<sub>E</sub>X file. Don’t use separate files for each section.
- (2) All custom commands used in your paper should be listed in the preamble. Don’t input a file containing custom commands.

## 2. Preamble and front matter

- (3) Remove all unused custom commands from your preamble. (Unused custom commands make work for the copy editor who has to check that they don’t interfere with the layout provided by the AU class file, `au.cls`.)
- (4) Don’t change any of the size parameters: e.g., do not use options like `12pt` to change the font size, do not use the `\setlength` command to change any parameter of the page size.
- (5) Use `\newcommand` or `\renewcommand` rather than `\def`.
- (6) Don’t use `\swapnumbers`
- (7) Declare all operators in the preamble, e.g., do not write things like  $\$C1o_1(A)\$, \$Con(A)\$,$  as both the font and the spacing will be wrong.
- (8) Don’t use capital letters, other than for proper names, in the title, section headings and subsection headings: so “Several applications of a theorem by Dilworth” rather than “Several Applications of a Theorem by Dilworth”.

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An early version of this list appears in George Grätzer’s text *Practical L<sup>A</sup>T<sub>E</sub>X*.

### 3. Text

- (9) Remove all text that has been commented out with `\begin{comment}` ...`\end{comment}` or with `%`. Such text is a nuisance for the copy editor.
- (10) Use `\emph{...}` for emphasis, don't use math mode. For example, when defining abelian, write `\emph{abelian}` not `$abelian$`.
- (11) Use the `\mathrm` font rather than the default font when using words or abbreviations for words in formulas; e.g., use `$A_{\mathrm{fix}}$` rather than `$A_{fix}$`.
- (12) Don't use the title of a Theorem/Proposition/etc as the last word of a sentence. For example, do not write "Thus we have established" followed two lines later by "Theorem 1.2. Let ... ". You must write complete sentences.
- (13) Use `\colon` for functions rather than `:`.
- (14) Use `\mid` rather than `|` in a set description. Use `:` rather than `\colon` in set descriptions.
- (15) Don't put punctuation inside an inline math environment. For example, `$\sin x.$` is wrong as it will produce the incorrect amount of space after the period.
- (16) Write the word **Section** rather than the abbreviation `§`; for example, write **Section 2** rather than "`\S 2`".
- (17) While the abbreviation `iff` is acceptable, don't use other abbreviations such as `w.l.o.g.`, `t.f.a.e.`, `w.r.t.`
- (18) Don't use `\limits` to force subscripts on large symbols (like `\bigcup`) to appear directly below the symbol in inline maths.
- (19) Don't use `\left\{`, `\right\}`, `\left(`, `\right)`, etc as a default. Even when these do not change the size of the symbol, they add extra space after the `\}`, `)`, etc. (This seems to be the default of Scientific Word.)
- (20) Use a list environment such as `enumerate` or `itemize` to create a list, don't hardwire it.
- (21) Use `\dots` as your default and let L<sup>A</sup>T<sub>E</sub>X make the decision whether to convert this to `\ldots` or `\cdots`. Use `\cdots` only if L<sup>A</sup>T<sub>E</sub>X gets it wrong. Definitely don't use "...".
- (22) Don't use footnotes.

### 4. Displayed math

- (23) To display a single line of math, use an `equation` environment or use
 

```
\[
math, math, math.
\]
```

Don't display math via

```
$$
math, math, math
$$
```

(or even worse, `$$math`, `math`, `math$$`, which is very hard for a copy editor to read).

While displayed math produced via `$$` does work properly most of the time, there are some  $\LaTeX$  commands that do not work properly with it; for example, `\qedhere`.

- (24) Don't use 2 or 3 displays in a row. Use an appropriate environment such as `align`, `alignat`, `gather`, etc instead.
- (25) Don't use `array` or `tabular` to display math. Use an appropriate environment such as `align`, `alignat`, `gather`, etc instead.
- (26) Don't use `array` or `tabular` to create a definition by cases. Use the `cases` environment instead.
- (27) Don't use `array` or `tabular` to create a matrix. Use one of the matrix environments, e.g., `pmatrix` or `bmatrix` instead.
- (28) Don't use the `eqnarray` environment at all. Use `align`, `alignat`, etc instead.
- (29) Don't use a `center` environment (with inline math) to display math.

## 5. Figures and graphics

- (30) Use a `figure` environment to include figures or graphics. The `figure` environment should end with a caption and a label. Refer to the figure via its label, not via "the figure below", for example. Very small diagrams, like commutative diagrams, may be included without a `figure` environment only if they do not create underfull pages.
- (31) When including graphics in pdf or ps format, for example, ensure that the graphics quality is high and not pixelated.

## 6. Theorems, proofs and cross references

- (32) Use the standard `amsart` environments for Theorems, Propositions, Lemmas, Corollaries, Definitions, Remarks, Proofs, etc—don't hardwire them.
- (33) If a theorem contains claims numbered (a), (b), (c), for example, do not present the proof via a list environment with items numbered (a), (b), (c). Instead, the proof could contain paragraphs numbered (a), (b), (c), for example.
- (34) Don't leave a blank line before `\end{proof}`.
- (35) Use `\cite{...}` for citations and use `\label{...}` and `\ref{...}` for internal references, except that internal references to equations should be done using `\eqref{...}`. Don't hardwire citations and internal references.

## 7. Horizontal space, vertical space and linebreaks

- (36) Don't use `\par` to end a paragraph. Use a blank line instead. Using `\par` with no blank line makes the file very difficult to read.
- (37) Don't insert vertical white space via `\bigskip`, `\smallskip`, `\vskip`, `\vspace`, etc, nor via your own custom commands.
- (38) Do not adjust horizontal space (via `\hspace` `\`, `\`; `\:` `\!` etc) without a good reason. Good reasons include after a final quantifier, as in  $\$(\forall y \in B)(\exists x \in A) \setminus, f(x) = y\$,$  and in set descriptions such as  $\$\{\setminus, a \in A \mid f(a) = b \setminus, \setminus\}\$.$
- (39) To fix bad line breaks and overfull hboxes, you should reword the text or display the math or both. Don't try to fix these by adding or removing horizontal space. In particular, don't use `~` to hardwire additional spaces.  
 On the other hand, use of `~` to prevent hanging symbols is encouraged; for example, `"in~$A$."` will prevent the `"$A$."` from appearing at the start of a line.
- (40) Don't hardwire line breaks via `\`, `\newline`, `\linebreak`, etc or by leaving a blank line. Line breaks must be calculated by the program.

## 8. References

- (41) You must use the *Math and Physical Sciences* reference style required of AU by Springer: see the References in the AU sample article for examples. Note that AU uses the following conventions:
  - (a) references are listed alphabetically by author's family names,
  - (b) no "and" between authors names,
  - (c) initials after family name and no space between double initials of an author (so "Davey, B.A." not "B. A. Davey"),
  - (d) no `\bysame`
  - (e) MathSciNet abbreviations of journal names,
  - (f) journal volume numbers in `\textbf`,
  - (g) no issue numbers,
  - (h) nothing at all in italics,
  - (i) titles of papers in "Sentence case",
  - (j) titles of books in "Titles Case",
  - (k) address of publisher is first-named city only (no multiple cities, no state no country),
  - (l) page ranges take an endash (so 121--138, not 121-138),
  - (m) no URLs nor DOIs except for preprints and papers not yet in print.
- (42) If you use Bib $\TeX$  and the style file `spmpsci.bst` to produce your references, you should paste the `*.bb1` file into you `*.tex` file. Then edit it so that it conforms to the guidelines above. Note that `spmpsci.bst` will produce a `*.bb1` file that is quite accurate, but it will almost certainly require some editing.

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