

Some rules of good scientific writing

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A non-native English speaking physics professor formulates obvious yet useful rules for writing research papers.

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I. INTRODUCTION

There are many volumes written about technical writing, and I probably do not have too much original material to add to them. Yet, whenever a student brings me a draft of their first research paper, I invariably see an almost universal set of problems. Some of these probably stem from the way writing is taught at school. As an example, at school we are taught to enrich our writing by avoiding repeating the same term and using synonyms instead. Unfortunately, if one is writing a scientific paper, using different words for the same object could be a disaster.

Hoping that these notes will actually be read, let us, without further ado, present

II. THE RULES

- A wise man said: “If you can abstain from writing – do not write!”
- “When in doubt – cross it out.” Try it; it really works miracles!
- The contents of a section should match its title.
- An equation appearing in the text should never be presented without comment, unless it is an intermediate step in a derivation.
- All “letters” (i.e., variables and constants) appearing in equations should be explicitly defined, even if seemingly obvious.
- All references, figures, tables, and equations should be numbered in order of appearance.
- Sentences cannot start with an abbreviation [e.g., Fig. 1 or Eq. (2)], or with “So” or “Also.”
- It is usually better to use past indefinite tense, for example “it was found” (as opposed to present or

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past perfect – “it has or had been found”), unless necessary.

- Saying “This was demonstrated by J. Doe (1905)” is correct, while saying “This was demonstrated in J. Doe (1905)” is not.
- Things to be compared shall be presented in a similar manner (for example, on graphs with the same scale).
- One should avoid self-praise, for example, saying that “interesting results were obtained.” It should be up to the reader to praise the work!
- The reader does not know what comes next in the paper; consider what the reader should be thinking as they reach this particular point.
- Avoid colloquial terms, for example, “slam” in “The projectile slams the target.”
- This one is a must: read the finished manuscript!

III. CONCLUSION

These rules are quite obvious and “common sense.” Yet, formulating them explicitly and keeping them in mind while writing could, hopefully, be useful. It goes without saying, that as with most rules, there may be exceptions.

Do we follow our own advice? Judge for yourself by checking out some of the recent published work of our group at <http://socrates.berkeley.edu/~budker/>.

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