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How to write a technical paper (and get it published)

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Past Editor in Chief IEEE T-MTT





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Personal editorial background

2017–2019: Co-Editor in Chief IEEE Trans. on Microwave Theory and Techniques

2015–2017: Associate Editor of the IET Electronic Letters
 2014–2016: Associate Editor IEEE Trans. on Microwave Theory and Techniques
 2011–2016: Associate Editor Int. Journal of Microwave and Wireless Technologies
 2010–2013: Associate Editor IEEE Microwave and Wireless Components Letters
 June 2015: Guest Editor Int. Journal of Microwave and Wireless Technologies
 Jan. 2015: Guest Editor IEEE Trans. on Microwave Theory and Techniques
 2006: Co-editor of the book *Periodic Structures*, Research Signpost

Active reviewer of many international journals

Author of 400+ papers in international journals and conferences

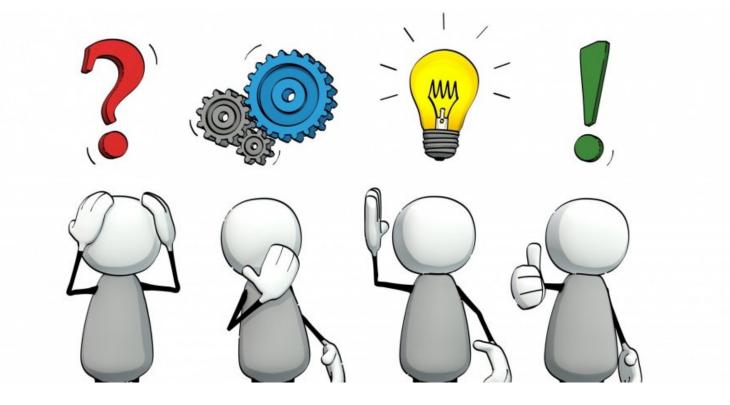


Why to write a paper?

- Publish new scientific results, spread the knowledge
- Allow other researchers to confirm your results
- Allow other researchers to extend your results
- Clarify difficult concepts for other scientists and general public
- Establish priority
- Publicize (advertise) new technology capability
- Career advancement

A problem and a good idea to solve it!

Problem: how to make an egg standing?



A problem and a good idea to solve it!

Problem: how to make an egg standing? Solution 1:

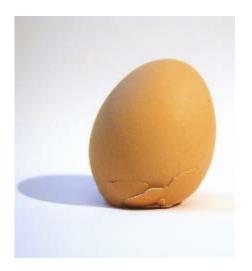


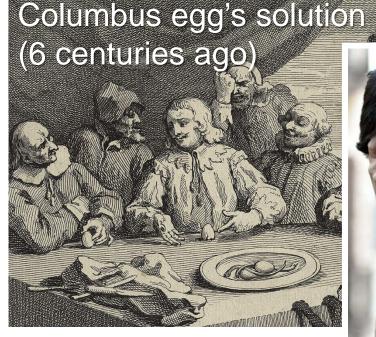


A problem and a good idea to solve it!

Problem: how to make an egg standing?

Solution 1:







Luca Perregrini, University of Pavia

A problem and a good idea to solve it!

Problem: how to make an egg standing? Solution 2:



A problem and a good idea to solve it!

Problem: how to make an egg standing?

Solution 2:







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What do you need to write a good paper? new A problem and a good idea to solve it!



Very "heavy" in the past





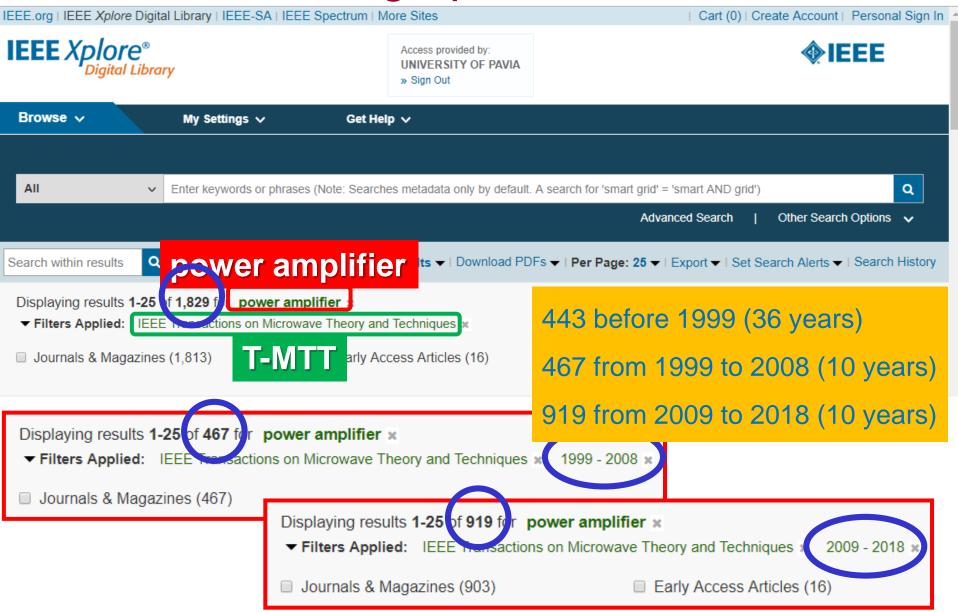


How to write a technical paper (and get it published)

More "light" today



How to write a technical paper (and get it published)



How to write a technical paper (and get it published)

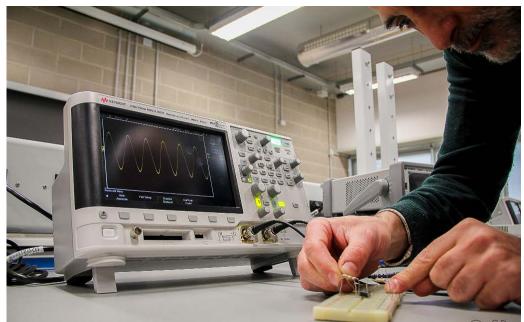
Do your best to identify the key papers, i.e., the ones where a particular theory/technique/technology was proposed for the first time, and give credits to them.

Also identify the paper proposing state-of-the-art development/results on the topic of interest, and use them as reference to compare your results.

At the end of the day, in the paper you must claim (and demonstrate!) some advancement over the existing literature.

The hard work before the paper...

- The topic has been identified
- The state-of-the-art has been investigated (bibliographic search)
- You found a good idea to overcome some issue/drawback/limitation of the previous works



- Develop your idea, converting it into a new theory/ technique/technology
- Write the paper!

How to write a technical paper (and get it published)

Select the venue to publish your study Conference

- Perfect venue to present preliminary results
- The idea is not fully exploited, the verification is ongoing
- Set priority (quick publication)
- Light review process (accept/reject)
- Discuss with pairs and collect suggestions to improve your work
- Networking (and tourism...)

Select the venue to publish your study Journal

- The work is mature: the theory/technique is fully developed. The verification was successful
- A more accurate preparation is needed
- Longer and tougher review process: subsequent revisions may be required
- More authoritative publication

Select the venue to publish your study Journal

Selection criteria:

- Reach out the proper target audience
- International coverage
- Habit/previous publication
- Reputation or quality/prestige (rankings, Wrong decisionish Wrong to publish Equiliare lost Impact Factor)
- Overall editorial standard
- Publication speed
- **Open Access**

Each journal/conference has a **template**.

Follow it strictly!

MICROWAVE THEORY AND TECHNIQUES					
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> REPLACE THIS LINE WITH YOUR PAPER IDENTIFICATION NUMBER (DOUBLE-CLICK HERE TO EDIT) <

Preparation of Papers for IEEE TRANSACTIONS and JOURNALS (May 2007)

First A. Author, Second B. Author, Jr., and Third C. Author, Member, IEEE

Abstract-These instructions give you guidelines for preparing papers for IEEE TRANSACTIONS and JOURNALS. Use this document as a template if you are using Microsoft Word 6.0 or later. Otherwise, use this document as an instruction set. The electronic file of your paper will be formatted further at IEEE. Define all symbols used in the abstract. Do not cite references in the abstract. Do not delete the blank line immediately above the abstract; it sets the footnote at the bottom of this column.

Index Terms-About four key words or phrases in alphabetical order, separated by commas. For a list of suggested keywords, send a blank e-mail to keywords@ieee.org or visit http://www.ieee.org/organizations/pubs/ani_prod/keywrd98.txt

I. INTRODUCTION

THIS document is a template for Microsoft Word versions 6.0 or later. If you are reading a paper or PDF version of this document, please download the electronic file. TRANS-JOUR.DOC, from the IEEE Web site at http://www.ieee.org/web/publications/authors/transjnl/index.html so you can use it to prepare your manuscript. If you would prefer to use LATEX, download IEEE's LATEX style and sample files from the same Web page. Use these LATEX files for formatting, but please follow the instructions in TRANS-

JOUR.DOC or TRANS-JOUR.PDF. If your paper is intended for a conference, please contact your conference editor concerning acceptable word processor formats for your particular conference.

When you open TRANS-JOUR.DOC, select "Page Layout" from the "View" menu in the menu bar (View | Page Layout),

Manuscript received October 9, 2001. (Write the date on which you submitted your paper for review.) This work was supported in part by the U.S. submitted your paper for review.) Inst work was supported in part by the U.S. Department of Commerce under Grant B512456 (sponsor and financial support acknowledgment goes here). Paper titles should be written in uppercase and lowercase letters, not all uppercase. Avoid writing long formulas with subscripts in the title; short formulas that identify the elements are fine (e.g., "Nd-Fe-B"). Do not write "(Invited)" in the title. Full names of shors are preferred in the author field, but are not required. Put a space between authors' initials.

F. A. Author is with the National Institute of Standards and Technology, Boulder, CO 80305 USA (corresponding author to provide phone: 303-555-5555; fax: 303-555-5555; e-mail: author@ boulder nist.gov).

S. B. Author, Jr., was with Rice University, Houston, TX 77005 USA. He is now with the Department of Physics, Colorado State University, Fort Collins, CO 80523 USA (e-mail: author@lamar.colostate.edu). T. C. Author is with the Electrical Engineering Department, University of Colorado, Boulder, CO 80309 USA, on leave from the National Research

Institute for Metals, Tsukuba, Japan (e-mail: author@nrim.go.jp).

which allows you to see the footnotes. Then, type over sections of TRANS-JOUR.DOC or cut and paste from another document and use markup styles. The pull-down style menu is at the left of the Formatting Toolbar at the top of your Word window (for example, the style at this point in the document is "Text"). Highlight a section that you want to designate with a certain style, then select the appropriate name on the style menu. The style will adjust your fonts and line spacing. Do not change the font sizes or line spacing to squeeze more text into a limited number of pages. Use italics for emphasis; do not underline.

To insert images in Word, position the cursor at the insertion point and either use Insert | Picture | From File or copy the image to the Windows clipboard and then Edit | Paste Special | Picture (with "float over text" unchecked).

IEEE will do the final formatting of your paper. If your paper is intended for a conference, please observe the conference page limits.

II. PROCEDURE FOR PAPER SUBMISSION

A. Review Stage

Please check with your editor on whether to submit your manuscript as hard copy or electronically for review. If hard copy, submit photocopies such that only one column appears per page. This will give your referees plenty of room to write comments. Send the number of copies specified by your editor (typically four). If submitted electronically, find out if your editor prefers submissions on disk or as e-mail attachments.

If you want to submit your file with one column electronically, please do the following:

--First, click on the View menu and choose Print Lavout --Second, place your cursor in the first paragraph. Go to

the Format menu, choose Columns, choose one column Layout, and choose "apply to whole document" from the dropdown menu.

--Third, click and drag the right margin bar to just over 4 inches in width.

The graphics will stay in the "second" column, but you can drag them to the first column. Make the graphic wider to push out any text that may try to fill in next to the graphic.

B. Final Stage

When you submit your final version (after your paper has

http://ieeeauthorcenter.ieee.org/create-your-ieee-article/use-authoring-tools-and-ieee-articletemplates/ieee-article-templates/templates-for-transactions/

http://ieeeauthorcenter.ieee.org/wp-content/uploads/IEEE_Style_Manual.pdf

How to write a technical paper (and get it published)

- Title
- Authors
- Abstract
- Keywords
- Introduction
- Technical content
- Conclusion
- References



Title:

- Specific and brief description of contents
- Catchy, in a scientific way. Well... if possible
- Precise: the reader shall catch what the paper is about (remember, 900+ competitors in 10 years...)

Title:

An improved microstrip filter = We sell fruits and vegetables



A novel low-pass step-impedance microstrip

filter with improved out of band response

= We sell fresh lemons and apples, and

healthy potatoes and fennels



Authors:

- According to IEEE rules, authors:
 - made a significant contribution: theoretical, experimental, analysis/interpretation of data
 - contributed to drafting/reviewing/revising the article
 approved the final version for publication
- Contributors who do not meet all of the above criteria may be included in the Acknowledgment
- Omitting an author or including a person who did not contribute is a breach of publishing ethics

Abstract:

- Overview of facts, results, conclusions
- Very important: it is read more widely than the article
- Placed at beginning of article, just below the title
- Written in third person, passive voice commonly used
- Should be self-contained. Don't include footnotes, references, ...
- < 10/15 rows</p>

Keywords:

- Select few (<6) keywords that better describe the content
- Search engines/indexing databases depend on the accuracy of the keywords (and of the title). Again remember, 900+ competitors in 10 years...
- Try to use standard words as much as possible (an acronym invented by you is useless)

Introduction:

- Defines problem, scope, and purpose/objective of the study
- Provides theoretical and historical background.
 References are mandatory here! Paraphrase, do not steal other people's wording...
- Outline the adopted methodology (in a descriptive way, no tiny technical details)
- Gives an overview of the organization of the paper "Sec. II describes the proposed method, Sec. III validates the method, ..."

Technical content:

- Typically split into several sections
- Methodology: explain the proposed theory/technique/technology in details. It must be reproducible and verifiable by other researchers
- Results: the goal is to show how your findings satisfy your objectives. Give illustrative examples by using tables and figures, and compare with theoretical/experimental/published results
- Validation of the results is mandatory!

Conclusion:

- Briefly remind the addressed problem and the methodology adopted to overcome limitations/drawbacks of existing solutions
- Explain how results confirm the goodness of the proposed approach (do not repeat the results), thus highlighting the significance of your work
- Should be self-contained: no citations, no crossreferences to formulas/figures/tables
- < 20 rows

References:

- A comprehensive literature review enhances the credibility of your work, as your contribution extends from a solid foundation
- Makes possible for readers to retrace your steps
- Only list resources cited in paper, not general references
- Properly format each biblio item, providing the needed details to easily find it (see template)

- If multiple mistakes in spelling and syntax, reviewer suspects similar sloppiness in the lab
- Only one idea in a sentence. Keep short: <20 words.
 Long sentences: greater risk of grammatical errors

"Prototypes have been designed, manufactured and experimentally validated by adopting a standard commercial laminate, named Taconic TLY-5, with electromagnetic characteristics of dielectric permittivity constant $\varepsilon_r = 2.2$ and dielectric loss tangent factor tan $\delta = 0.0009$."

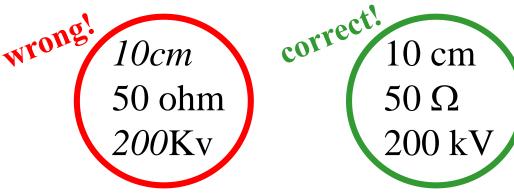


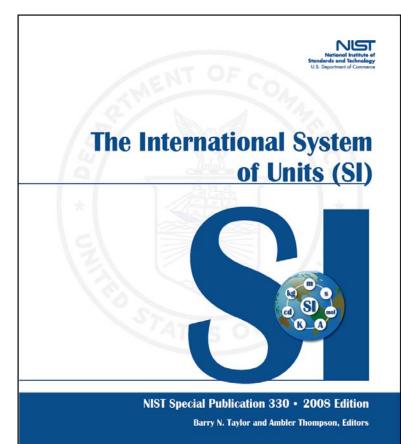
"All prototypes have been implemented by adopting Taconic TLY-5 substrate, with dielectric permittivity $\varepsilon_r = 2.2$ and loss tangent tan $\delta = 0.0009$."



"Prototypes were based on Taconic TLY-5 substrate ($\varepsilon_r = 2.2$, tan $\delta = 0.0009$)."

- Measurement units: there are rules, follow them!
- Examples:
 - numbers are never italic
 - measurement units are never italic
 - add a space between the number and the meas. unit

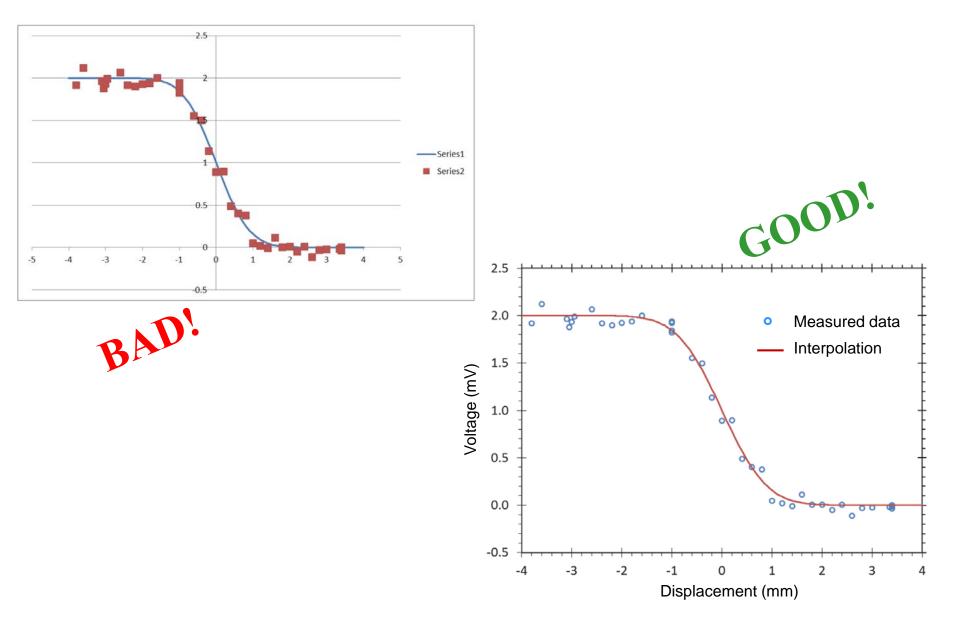




https://www.nist.gov/sites/default/files/documents/2016/12/07/sp330.pdf

How to write a technical paper (and get it published)

- Figures and tables are the most efficient way to present results. Proper formatting significantly improves readability
- Dimension the figures to be included without resizing. Use the same size of the text
- The symbols in the figures shall have the same appearance as in the text and formulas.
- Captions are descriptions of tables/figures: explain clearly what is shown, and include the details necessary to understand the item



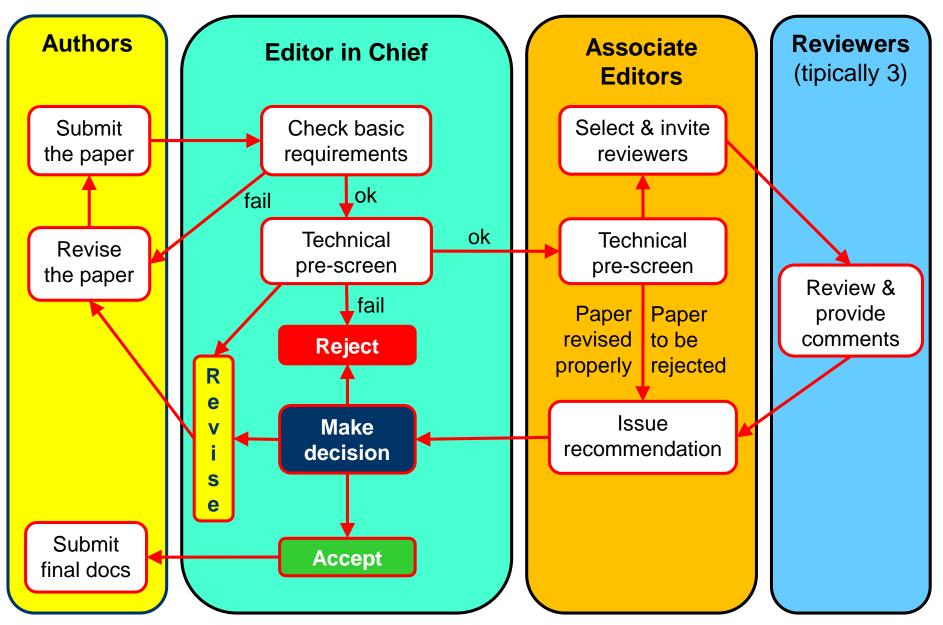
Ethics of scientific writing

- Avoid double publication of the same matter
- Avoid contemporary submission of the same matter to different journals and/or conferences
- Don't use the work of others without appropriate attribution (plagiarism may lead to ban the authors)
- List only those co-authors who contributed substantially to the work

The review process

- Science depends on the peer review process to assess paper technical correctness, novelty, significance
- The review process is an important step to further improve your work
- Keep in mind that reviewers are the first readers of your paper. If they believe something is unclear, do your best to make it understandable
- Do not fight with reviewers, use their comments to improve your work

The review process



How to write a technical paper (and get it published)

Prepare the revised manuscript

- Return the revised manuscript to the editor with a point-by-point response to the reviewers' comments and a version with all the changes duly highlighted (e.g., by color)
- Keep in mind that reviewers are the first readers of your paper. If they believe something is unclear, do your best to make it understandable
- Do not only reply to the reviewers. Modify the manuscript to clarify their doubts

Production and publication

- Upload the required documents (read carefully the instructions to avoid delays)
- Complete the copyright form (e-copyright for IEEE)
- Read the proof sent by the production and ensure that everything is okay
- Return the proof back approved/commented before the deadline
- Wait to see the article posted online and/or printed

What if the paper is rejected?

- IEEE policy allows resubmission of rejected manuscripts
- If the manuscript was rejected for technical reasons (e.g., missing validation, errors in the theory, ...) you can revise and resubmit to the same journal. However, if the EiC judges the revision not satisfactory, the paper is rejected upfront
- If the manuscript was rejected for lack of novelty, you should try to re-orient your research activity to address a more hot topic

Personal view of the review process

- The review process is not a matter of accepting/rejecting papers
- It is a fundamental contribution of the whole scientific community to elevate the quality of any research study
- If properly conducted by editors and reviewers, and correctly perceived by the authors, it will help tuning the study to make it worth publishing

