



Member Benefits

IEEE Transactions on Microwave Theory and Techniques

■ Michael Steer

The flagship publication of the MTT-S is *IEEE Transactions on Microwave Theory and Techniques*. As the premier journal in the microwave field, we seek to capture and disseminate knowledge of RF, microwave, guided-wave, and wireless technologies. We provide a service to many of our members who want to publish their contributions, and we provide a service to our readers by presenting the best, rigorously reviewed papers in the microwave field. We also provide essential fundamentals—continuing education—that enable readers to develop core understanding from which new concepts and products can be developed. What is published in the *Transactions* is governed by the following field of interest of the Society:

The field of interest of the Society shall be “Microwave Theory, Techniques and Applications” of RF, microwave, guided wave, and wireless technologies, as they relate to components, devices, circuits, transmission lines, and systems involving the generation, modulation, demodulation, con-

Michael Steer is editor-in-chief of IEEE Transactions on Microwave Theory and Techniques.

trol, transmission, detection, and effects of electromagnetic signals. It shall include scientific, technical, and industrial, activities, subject to timely modifications approved by IEEE TAB. Microwave Theory and Techniques applies physical and mathematical principles to analyze structures with dimensions representing a significant fraction of a wavelength or when propagation effects need to be considered.

By all measures, we are performing our mission well and have become the second most widely read journal in electrotechnology. This is measured by electronic downloads with our measure being downloads through the *IEEE Xplore*. Even five years ago, there was little indication of the readership of technical papers. However, with *IEEE Xplore*, we have some statistics. There are over 1 million downloads of transactions articles each year. Most of the downloaded papers are published within a year of the download, but articles going back to the inaugural publication of the transactions in 1953 are still read. We can expect that each copy of an article that is downloaded is at least scanned quickly, and many are read in depth. So, roughly on average, a paper is downloaded and

read 200 times and perhaps read many more times. Over 5,000 copies of the transactions are mailed to members each month, and the Society distributes an annual CD-ROM-based digital archive that captures the Society’s publications on CD-ROM. Presumably, many articles are read this way. So the old wisecrack that a paper was read by the authors and the reviewers alone is certainly not true. A large spike in downloads occurs within days of an issue being released, so there are many people who use electronic access as the primary means for reading the transactions.

To ensure that we publish the highest quality articles, we seek to publish only original material that has not been published elsewhere. In particular, we do not want to publish a paper if the essential results have been published in an archival conference that can be accessed electronically. We rarely publish an article without independent validation, with experimental verification preferred. There is a very good reason for requiring experimental validation of theoretical results. Experimental validation both provides independent verification of theoretical results and is a demonstration that the system being investigated can be built. It also limits the minimal publishable

increment syndrome whereby an author makes subtle changes to theoretical work and generates new theoretical data. After all, our mission is to capture and disseminate original knowledge. One example of the importance of experimental verification is the extensive work in the 1960s through the 1980s on microstrip circuits and the definitions of characteristic impedance. Four different definitions of characteristic impedance were developed based on theoretical results. It was only when detailed measurements were performed that it was clear that only one of these was correct.

The year that has passed, 2005, was a very good year for the *Transactions* and, by extension, for the health and vitality of the microwave community. In 2005, we published 4,030 pages and 424 manuscripts. This represents tremendous growth as can be seen in Figure 1, where the number of pages that have been published since the beginning of the *Transactions* is plotted. Accounting for the index, table of contents, and flyers that we print, the average length of a manuscript in 2005 was 7.9 pages, compared to 8.1 pages in 2004 and 8.3 pages in 2003. The distribution of the length of papers published in 2005 is shown in Figure 2.

The one-, two- and three-page publications identified in Figure 2 are editorials and letters to the editor reporting corrections or commenting on papers previously published in the *Transactions*. More than half of the papers are eight pages long or less. We no longer publish short papers in the *Transactions* and instead direct these to our sister publication, *IEEE Microwave and Wireless Component Letters*.

Over the last few years we have experienced a tremendous increase in the number of manuscripts submitted to the *Transactions*. This is a good indication of the health of the microwave community and the vigorous effort to develop the microwave and wireless industry in countries where it has not been strong. The number of submissions per week over the last few years is plotted in Figure 3 in six month intervals. With the rapid growth in submissions to the *Transactions* the break down using half-year periods provides a good way of planning for the future. The need for the division is related to summer in the Northern Hemisphere as the rate of submissions to the *Transactions* drops to less than half the average rate in August and late July.

Figures 4 and 5 summarize the distribution of articles published in the *Transactions* in 2003 and 2005. Figure 4

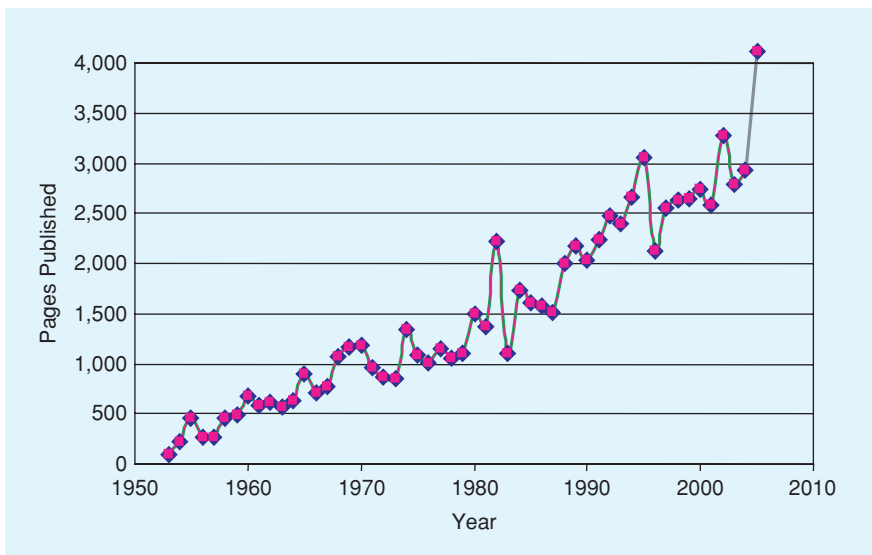


Figure 1. Number of pages published per year since the first year of the *Transactions*.

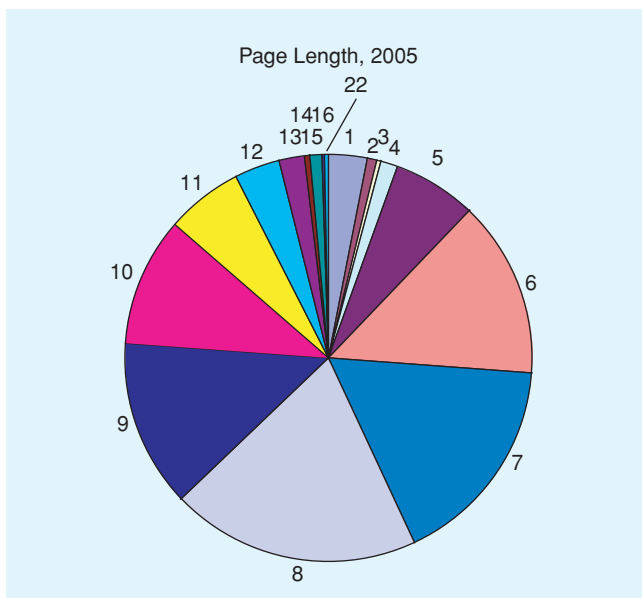


Figure 2. Page length of papers published in 2005.

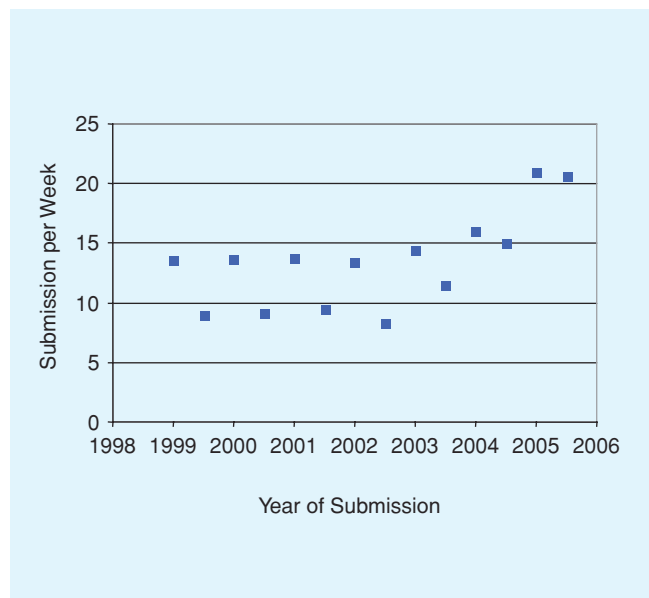


Figure 3. Submissions per week in half-yearly increments.

indicates comparable levels of papers from the Asia/Pacific, European, and North American regions. The distribution of papers from the most prolific countries is shown in Table 1. Most papers came from academia, but there is a good representation of papers from industry and government laboratories (see Figure 5).

The nature of technical publishing is in a rapid state of transition, with the electronic version of a publication dominating the print version. As far as I am concerned the *Transactions* is now an electronic publication that

also happens to produce a paper-bound version. Even so, substantial costs are involved in producing the *Transactions*, and revenue is required to offset these costs. Costs are incurred for running the office of the editor-in-chief (EIC), but most of the costs are in copyediting the manuscript so that it is produced at the highest quality. Being cognizant of the costs and the diversity of our membership, the production of the *Transactions* is globalizing in an effort to keep costs down. The income from the fees associated with electronic

downloads has been growing, but this is beginning to level off and could even drop in the coming year. The revenue from institutions such as libraries is tied to electronic downloads. Potentially, this could be a limited source of revenue as the open access movement, including Google Scholar, becomes more entrenched, and readers gain free access to publications. We are already seeing the number of downloads per paper dropping. Revenue also comes from member subscription fees, but this is hardly revenue as it costs more to

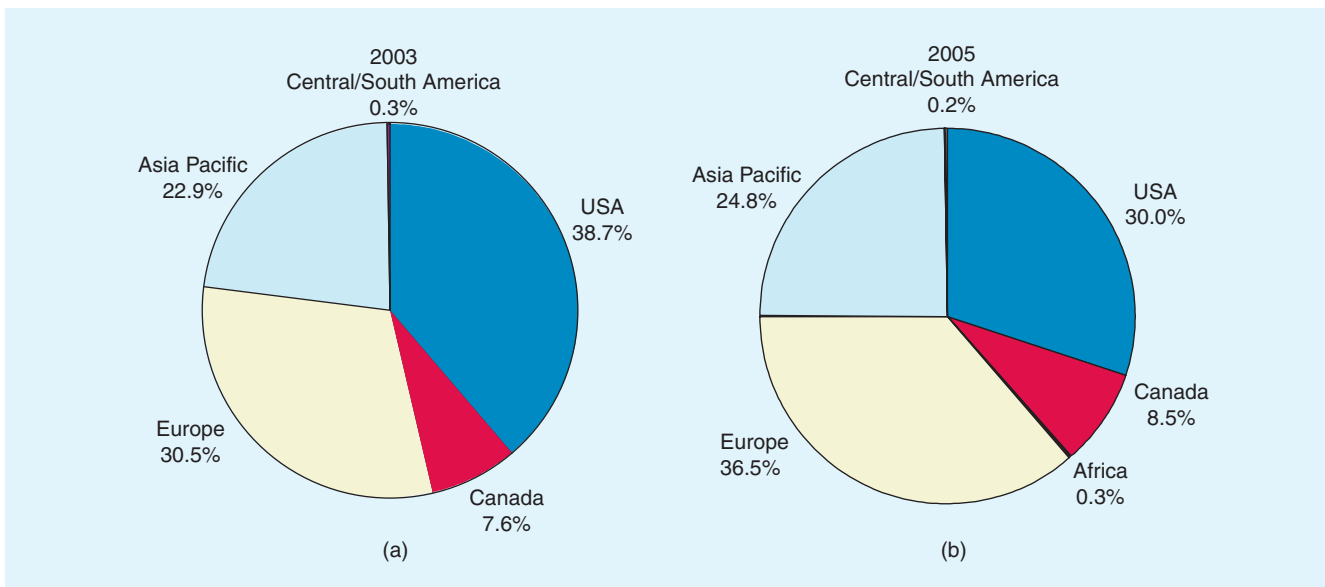


Figure 4. Distribution of papers published in 2003 and 2005 by region of origin.

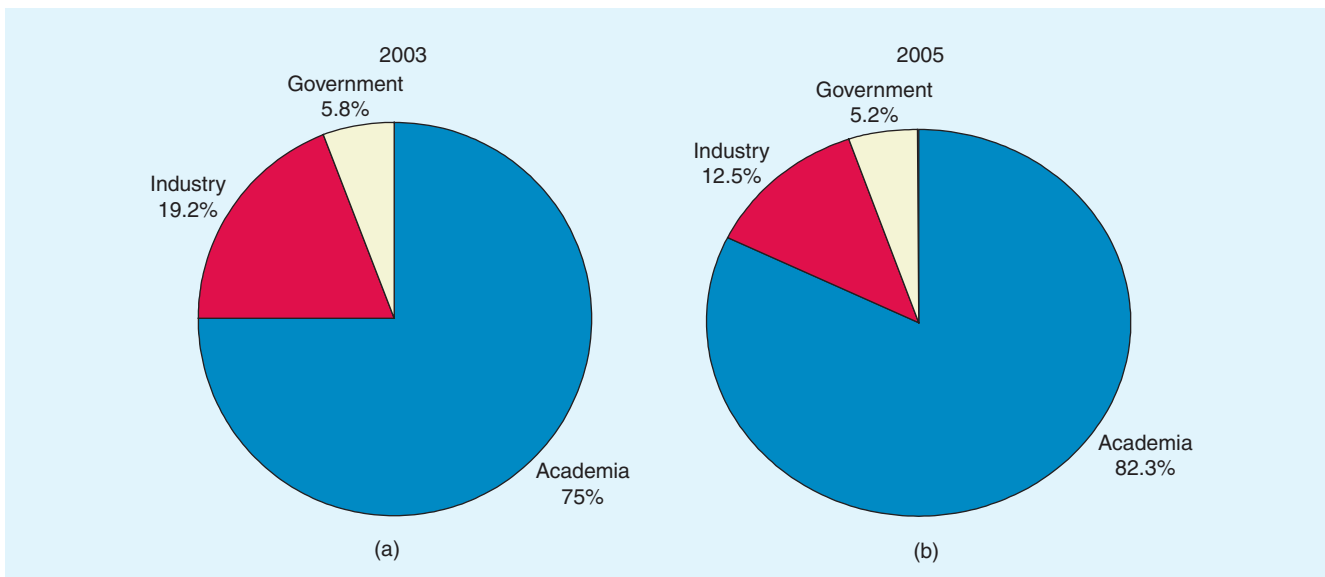


Figure 5. Distribution of papers by institution of authors.

Table 1. Country of Origin of Papers published in 2003 and 2005.

Country	Papers 2005	% 2005	Papers 2003	% 2003
USA	144	30	127	39
Canada	41	8.5	25	7.6
Taiwan	33	6.9	33	10
Germany	32	6.7	16	4.9
Korea	28	3.8	9	2.7
Spain	28	5.8	7	2.1
Italy	20	4.2	15	4.6
France	18	3.8	12	3.7
China	17	3.5	13	4.0
UK	17	3.5	8	2.4
Singapore	16	3.3	8	2.4
Japan	15	3.0	17	5.2
Finland	8	1.7	7	2.1
Sweden	8	1.7	6	1.8
Switzerland	6	1.3	3	1
India	5	1.0	3	1

print and mail one year's *Transactions* to one member than the member's subscription. Another important source of revenue is author page charges. For a very long time, the *Transactions* has required authors to pay US\$200 per page for pages over five pages. Beginning in January 2005 this was raised this to a six-page limit, keeping the overlength page charge at US\$200. The cost of producing, printing, and mailing an additional page exceeds this figure. Understandably the overlength page

charge is a sore point for authors, but the "books" must be balanced. In the broader publishing community, there is a certain belief that an author may need to carry the entire cost of publication in the future, and articles will become freely available. For now, a mix of revenue sources covering the costs of publishing the *Transactions* puts us in the best position to adjust. Some of our sister Societies that do not have author charges are now restricting the number of pages that can be published and dropping the

acceptance rate of papers. We have been able to avoid this fate and have achieved a reduction in time from submission to publication that is around nine months (see Figure 6). We have also maintained reasonable acceptance rates as shown in Figure 7. Acceptance rates of around 50% or less place us among the top journals in terms of selectivity. Many factors affect the acceptance rate, but the quality of the submitted manuscript is important in creating the right impression with reviewers. The great majority of manuscripts are submitted almost exactly as they appear in print. Some are submitted with low-quality figures and multiple small errors and often are not successful in the review process. The biggest factor leading to rejection is probably incremental publication. In the past it was accepted practice for an author to effectively disregard a conference publication and repeat material in a journal paper. In the last few years, we have seen a tremendous change in online accessibility of publications, including conference papers. So manuscripts that repeat earlier published material without significant expansion, so that the submitted manuscript is a distinct paper, are generally rejected. After all, we seek to publish only original material.

One of the priorities in the editing of the *Transactions* has been reducing the time from initial submission of a manuscript by an author to the time

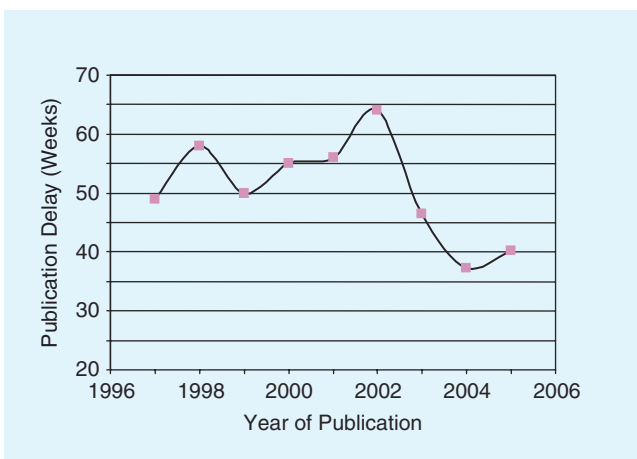


Figure 6. Publication delay by year. The IEEE goal is 39 weeks or 9 months turn around.

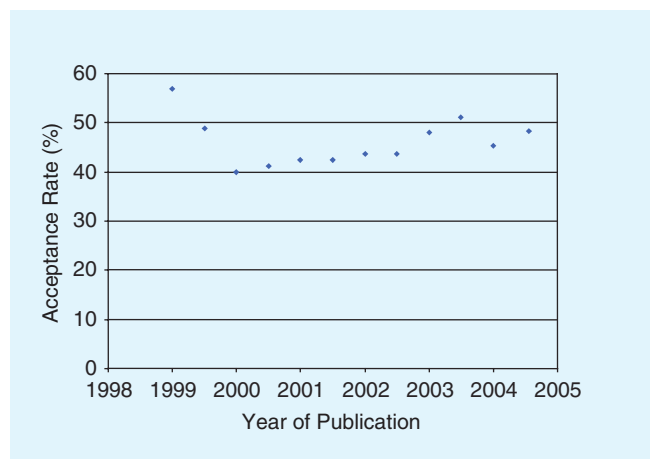


Figure 7. Historical acceptance rate by year by time of submission in half-yearly intervals.

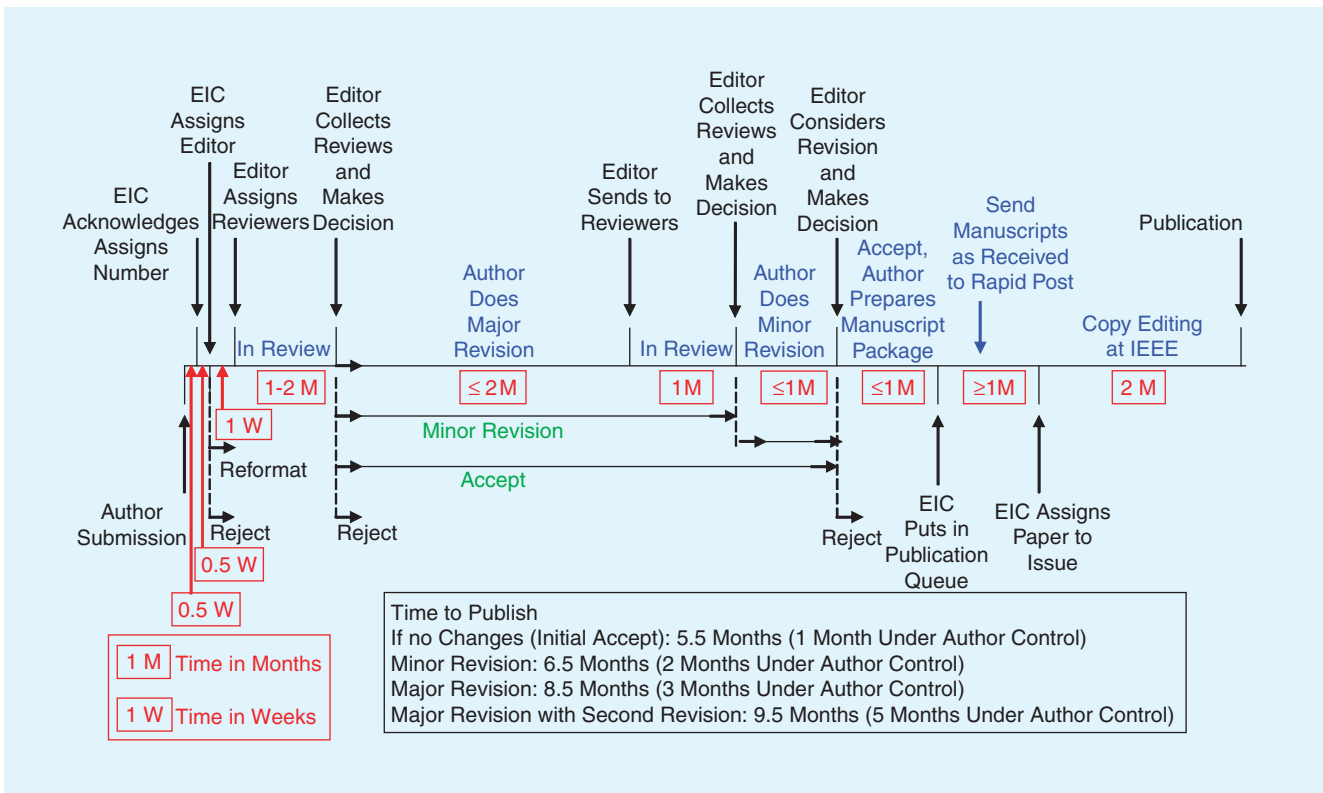


Figure 8. Timeline for editing manuscripts.

it is published. The goal of the IEEE is to achieve a nine-month turnaround, which corresponds to approximately 39 weeks. We have reached the goal by developing the process outlined in Figure 8. Manuscripts submitted to the Transactions are handled in an e-mail-based editing process. A manuscript is submitted as a pdf file of no more than 1 MB in size e-mailed to the EIC at TMTT@ieee.org. When a paper is received, the EIC reads it and requests obvious changes from the author. This (time-consuming) initial editing is important in maintaining rapid turnaround and assists authors in putting their material in the best form for review. The paper is then sent to one of the associate editors to handle the editing process, or the EIC handles it himself. Manuscripts are then sent to five reviewers, some of which, unfortunately, never respond. All this interaction is done via e-mail using pdf files rather than relying on a centralized manuscript handling system. The advantage of the e-mail system is that editing can proceed

daily, and the EIC does not need to be connected to the Internet to work. It is a personalized process, and most reviews are received back in four weeks, although with involved papers it can take up to two months or more to receive adequate reviews. Most papers must be revised so that final dispositions take from three to six months, which includes the time for the author to revise the manuscript. It then takes one to four weeks for an author to send the final version of the manuscript to the EIC. Once a month an issue is assembled by the EIC and sent to the IEEE, where it is typeset and otherwise made ready for printing. Generally, an issue is sent to the printer one week before the month of publication. Overall the best that can be achieved is to process a manuscript from initial submission to print in six months. Special issues generally take longer as they must wait until all of the papers submitted to the *Transactions* maintains a Web site at

<http://www.mtt.org/publications/Transactions/transactions.htm> where calls for papers for special issues and links to author tools are maintained. Authors can speed the process up by carefully reading the Web site prior to submission. For more information about these special issues, see the *Transaction's* Web site.

Another factor that enables rapid turnaround is that we maintain records of reviewers responsiveness; the algorithm that selects reviewers gives preference to the selection of reviewers who have been responsive in the past. The records of responsiveness are shared with conference technical program committees to aid them in selecting a good review body.

I hope that this has proved to be informative and an indication as how the Society provides rigorously reviewed publications for readers and serves the author community by providing an imprimatur of their work as well as getting their ideas into print quickly. Your suggestions are always welcome and can be sent to TMT Teditor@ieee.org.