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摘 要

科学期刊的出版和发行技术正在迅速变化。主要对 Ap. J. 如何使用电子投稿方式及该杂志的网上版作了介绍。同时也叙述了较快的审稿及非常快速的出版等方面的进展。

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Electronic Publication in 1997

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Abstract

Publication and distribution techniques for scientific journals are changing rapidly. I will describe the use of the electronic submission of manuscripts, primarily to the Astrophysical Journal, and that Journal's on-line edition. Progress toward more rapid reviewing and very rapid publication are also described.

Key words electronic submission of manuscripts—on-line edition—electronic publication

This is a description of electronic publishing in the mid 1990s with special emphasis upon the Astrophysical Journal (hereafter ApJ), which is a large publication of 25,000 pages per year

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that has become the leader in these technqiues among scientific journals. I will discuss first the submission of manuscripts in electronic form and then the on-line edition of the Journal. The development of the submission techniques was due to Jeannette Barnes and Janice Sexton, and of the on-line edition primarily to Dr. Peter B. Boyce of the American Astronomical Society (the ApJ's owner) and Mr. Evan Owens of the University of Chicago Press (the ApJ's publisher).

1 Electronic Submissions

There are three reasons for submitting a manuscript in electronic form to a scientific journal. The first is to save money because typesetting costs about 38% of the total production costs (for the ApJ); those are bypassed if the authors submit computer-readable texts. However not all of that 38% is saved because, at least at present, the copyediting of an electronic manuscript requires more-skilled people than for a paper manuscript and therefore people with higher salaries. At first electronic manuscripts take more time to copyedit, but with experience they take no longer than paper ones.

The second advantage is in accuracy. Whenever a manuscript is typed again, errors are likely to be introduced and they may not be found in proofreading. That is particularly true for long tables of numbers or complex mathematical expressions.

The third saving is in time. All major printers now work from computer-readable manuscripts as input. If the compositors have to retype the manuscripts into an electronic form, publication will take several weeks longer. Another time-saving is in transmission; electronic manuscripts can be sent to journals or between editors, referees, and authors through the Internet in minutes whereas delivery by mail takes days or weeks.

Currently about 75% of the manuscripts to the ApJ are sent to the editorial office electronically, usually by FTP (File Transfer Protocal). Until recently only AASTeX, a form of LATeX, was allowed because TeX was the only computer language that could be used to send special symbols over the Internet. Now contemporary versions of Microsoft Word and Word Perfect also are transmitable and are accepted.

The reviewing of manuscripts is still done on paper copies because it would often take referees extra time to decode the TeX in the electronic copies. But the mailing of paper copies of the manuscripts also takes time. We are now experimenting with posting manuscripts on the World Wide Web (WWW) with passwords. Then the editors and referees can call them up and print them out as they wish.

Copyediting is done on the electronic manuscripts, using e-mail, telephone, or FAX communications with the authors. This takes less than a day or two for each manuscript if the authors can be reached.

When the lower publication costs from electronic submissions are realized, we plan to charge lower page-charge rates for those papers. We already charge authors less per page ($91) for computer-readable tables than for ones that need to be typeset ($134).

2 On-line Journal

The ApJ Letters were posted on the WWW first in July 1995 and the on-line main Journal and Supplements were started in October 1996. At first they were free, but starting in April 1997 they were subscription password-controlled.

To make it easier and faster for readers outside North America to receive the on-line edition, a mirror site was established in Strasbourg, France primarily for the benefit of European readers and one is being set up in Japan for eastern Asiatic readers.

The cost of producing an on-line edition of the Journal can be judged from the past and current subscription rates, which are as follows:

1996: ApJ on paper cost $800 per year (plus postage) to libraries or $0.04 = 31 fen per page. For individuals and for libraries in developing countries the rate was $165 per year (plus postage) or $0.01 = 6 fen per page.

1997: ApJ + Supplements, on-line + paper editions cost libraries $1050 per year or $0.04 = 35 fen per page. Individuals or libraries in developing countries may subscribe to either the paper edition for $180 or the on-line edition for $80 or to both for $200.

There was no loss of subscriptions by libraries in 1997.

Once a university library subscribes to the on-line edition, all faculty members and students in that university may read the Journal free as often as they wish.

There are now many on-line journals. For instance, Astronomy & Astrophysics (hereafter A&A) and all of the journals published by the American Institute of Physics, such as the Physical Review, are available on-line. But there is a major difference between those and the ApJ. Numbers and information in the ApJ can be read directly into computers and used, whereas the on-line versions of the other journals are only bitmaps of the printed pages; words and data cannot be copied into computer applications. The bitmaps are like photographs of the printed pages. That is unfortunate in the case of a large table of numbers, that would have to be scanned optically before they could be entered into computers.

The other advantage of the ApJ system is its ability to interact with other sets of information. The ApJ uses the data in the Astronomical Data Systems (ADS), which has optically scanned most of the astronomical journals published since 1975. Thus when one encounters a reference to a paper in, for instance, a 1981 issue of A&A, a click of the cursor on that reference will immediately call up the paper on the computer screen.

Publication has been a slow process; typically about six months are required, after acceptance, to print and distribute a journal. In the case of the ApJ where authors in the past had seen both the copyedited manuscripts and the galley proofs, each paper went through the mail 14 times. But publication in an electronic era need not be that slow. Starting in October 1997 the University of Chicago Press is posting ApJ Letters on the WWW within three weeks of acceptance. What happens is the accepted papers are copyedited and the Press composes the papers in the appropriate format. Then they are posted individually on the WWW without final page

numbers. Once all of the papers in a issue have been accepted and arranged in the sequence chosen by the Letters Editor, the papers are paginated.

We hope that this fast publication will soon be used for the main Journal and Supplements also.

It would be helpful scientifically to compete in speed with posted preprints because some preprint services, such as the Los Alamos one, do not descriminate between reviewed and unreviewed papers. An editor of a physics journal recently checked to see the status of a large number of papers that his journal had rejected; he found that 88% of them were still present in the Los Alamos preprint service. Therefore such listings contain too much incorrect or trivial information.

The ApJ guarantees that it will archive all on-line editions and, in case of changes in the technology, will provide the Journal from 1997 on in the new form.

We cannot predict at present how much longer the printed version of the Journal will continue. On the one hand our libraries are overflowing with books and, with the increased annual output of material, the problem is becoming critical everywhere. On the other hand, librarians are (rightly) concerned about our ability to read the on-line version at all times in the future. We can always read books, but technologies, such as microfiche, CD-ROMs, and videos, have limited lifetimes.

Some journals make older issues available on CD-ROMs, but those cannot interact with other data sources, such as calling up references from the ADS. Therefore we are unlikely to provide CD-ROMs of issues.

In recent years we have had a separate CD-ROM Series for large tables of numbers. Most authors and their institutions cannot afford the page charges to print a 50-page or 200-page table, for instance, but inclusion on a CD-ROM was much cheaper. We were charging $1 for 1 kilobyte of data. Now we are terminating the CD-ROM Series but are allowing authors to put their large tables in the on-line version only. The cost will be determined next spring but it is likely to be much less than $1 per kilobyte. Thus the on-line and the printed editions will not be identical; the former will contain more information.

The main purpose of our Supplement Series was to provide a place for very long papers or ones of interest to only a few readers. Also we could include compilations (catalogs) of material previously published in diverse locations whereas the main Journal allows only new original material. But many Supplement papers are long because they have many tables or graphs; in the future they can be placed in the main Journal with the long tables and many graphs in the on-line edition only. Therefore the future of the Supplement Series is uncertain at present.

We also have a Video Series to present movies of numerical simulations (e.g. the motions of stars in a cluster or the merging of two galaxies), hydrodynamic calculations (e.g. a galaxy jet impinging upon the surrounding gas or a shock wave moving through the interstellar medium), or time-lapse films of solar activity. Eventually those too will be placed in the on-line version of the main Journal.

Finally, starting in 1998 two other American astronomical journals, the 148-year-old Astro-

nomical Journal and the 108-year-old Publications of the Astronomical Society of the Pacific, will be published by the University of Chicago Press too and will have on-line editions with the same capabilities as the ApJ. Subscriptions to the on-line editions of the ApJ and the Astronomical Journal will be combined.

Once many journals are available on-line and referencing from one to another becomes easy, the distinction between journals will diminish and the sizes of the journals will become unimportant.