Introductory guide for reviewers

This guide is for early-career researchers who are beginning to review articles for peer-reviewed journals.

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IOP Publishing (IOP) is a world leader in scientific publishing specialising in physics and related subjects. We are an integral part of the Institute of Physics, a leading scientific membership society working to advance physics for the benefit of all. Reviewers play a vital role in scholarly communication, helping to improve and highlight the most important work in their field. This guide explains how reviewing works and what it takes to be a great reviewer.

For more information and to download a digital version of this guide go to publishingsupport.iopscience.org.

**CONTENTS**

<table>
<thead>
<tr>
<th>An introduction to the peer-review process</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>How to write a review</td>
<td>6</td>
</tr>
<tr>
<td>After you submit your review</td>
<td>10</td>
</tr>
<tr>
<td>Ethical issues</td>
<td>11</td>
</tr>
<tr>
<td>Frequently asked questions</td>
<td>13</td>
</tr>
<tr>
<td>Publishing glossary</td>
<td>15</td>
</tr>
<tr>
<td>IOP publications</td>
<td>16</td>
</tr>
</tbody>
</table>
An introduction to the peer-review process

What is peer review?
Peer review is the process used to assess an academic paper before deciding whether it should be published or not. The paper is looked at by experts in the field, known as reviewers. One or more reviewers will comment on the quality, originality and importance of the work. This information can then be used by the Editors of the journal to make a publication decision, and by the authors to improve their paper.

Why peer review?
The peer-review system is essential in order to ensure that only credible, high-quality research is published. It not only improves the quality of published papers, it also ensures that readers can trust a journal to provide reliable information. As members of the scientific community, researchers are expected to review papers. The reviewers also benefit from the process as it provides an opportunity to keep up to date on progress in the field and to see new and innovative research before it is published.

The peer-review system is used widely throughout the world. The exact requirements of the reviewers may vary slightly from journal to journal; however the main aim is always to improve the paper and assure the quality of the research. This process is beneficial to the authors, the readers and to the journal itself.

Different types of peer review

- **Single-blind**: Authors don’t know who the reviewer(s) is, but the reviewer(s) knows who the author is
- **Double-blind**: the reviewer(s) of the paper do not know the identity of the authors, and the authors do not know the identity of the reviewer(s)
- **Open review**: the names of the reviewers are disclosed to the authors
- **Transparent peer review**: the peer-review reports are published with the article
- **Collaborative review**: referees interact with each other and can access each other’s reports, either during review or immediately afterwards
- **Post-publication**: online comments on the published version of the article are allowed, independent of any formal peer review that may have already occurred on the article
THE PEER-REVIEW PROCESS

Paper submitted

Journal assesses general suitability

Reviewed by reviewers

Decision made by editors

Sent back to authors for revisions

Decision made by editors

Sent back to reviewers for final assessment

Decision made by editors

Accepted

Rejected

Accepted

Rejected

Accepted

Rejected
How to write a review

The aim of your report is to help the journal to decide if the work is suitable to publish. It also helps the authors improve the manuscript before it is published.

When you receive a request to review you should ask yourself the following questions:

Am I an expert?
Do you know the field well enough to be able to assess the
• novelty of the research?
• quality of the research?
• impact and importance of the research?
If the answer to any of these questions is “no” then you should decline the task and tell the journal that this is not your area of expertise.

Will I be able to meet the deadline?
Can you prepare a report in a reasonable amount of time? Some reports take longer than others depending on how complex the work is. The authors will want a decision as soon as possible.

It is OK to ask for more time if you need it or even to decline a request if you are already working on several reviewer tasks. In that case, it is very helpful if you can suggest alternative reviewers.

Do I have a conflict of interest?
If you are a colleague of the authors, helped with this research or are in direct competition with the authors, you should not review this work. See the ethical section in this guide for more information.

You should let the journal know as soon as possible if you can or cannot report. If anything is unclear, ask the journal to explain or give you more information.

Important things to remember
• Keep it confidential
• Do not contact the authors
• Be objective: review the research, not the researcher

Steps in forming an opinion
It is important to understand the aims, scope and impact of the journal before assessing the paper. Therefore, you should begin by reading any instructions that you have received. There may be specific journal guidelines, including information on the scope of the journal, which you should also read. These should be available online but if you cannot find them you can ask the journal for a copy of the guidelines. The guidelines may be different depending on the kind of article that you have been asked to review, e.g. Letters or Fast Track Communications may have different criteria to Papers. You should then read the manuscript with these instructions and guidelines in mind.
When assessing a paper, you should ask yourself the following questions:

**Is the work understandable and correct?**
- Is it clear what the authors are trying to achieve?
- Are there sufficient references to provide background and put the work in context?
- Are the results backed up with evidence? Are there any unsupported claims?
- Is the work correct? Are there any errors, flaws or mistakes in the manuscript?
- Are the mathematics or statistics correct?
- Do you understand the work?

**Is the work novel and interesting?**
- Are the results interesting?
- Is the research important? Do the authors explain why it is important or how it advances our understanding of the field?
- Is the work original? Does it contain new material? Have any parts of the manuscript been published before?
- How relevant is this work to researchers in your field? Would it be beneficial to get an opinion from a researcher in another field?
- Is this novel, or an incremental advance over previous work?

**Is the work well presented?**
- Does the title reflect the contents of the article?
- Does the abstract contain the essential information?
- Are the figures and tables correct and informative? Are there too many, too few?
- Does the conclusion summarise what has been learned and why it is interesting and useful?
- Is it clear?
- Is the manuscript an appropriate length?

You should consider all of these questions when you assess a manuscript. It is important to give as complete and thorough a report as possible.

**Writing your report**

All journals are slightly different but a reviewer form is usually made up of three parts: a series of specific questions, a space for you to write your report for the authors, and a space for you to add any confidential comments to the Editor. You may be asked to score the article on a number of different aspects, for example: originality, scientific rigor, significance, or clarity. You will need to answer all the questions asked by the journal.

Start your report by briefly summarising the purpose and results of the paper. This shows the authors and Editors of the journal that you have read and understood the work. In addition, it is a useful summary of the results for the Editors.
How to write a review
(continued)

It is especially important to:

- Give your opinion of the level of interest and novelty of the work
- Provide full references to earlier work if you believe the research does not add anything new
- Be clear about what is needed to bring a paper up to the required quality standards for publication, if you think the work could eventually be published
- Be specific about what is particularly interesting or good about a paper
- Be specific in any criticism. Do not just say “This result is wrong” but say why it is wrong; “This result is wrong because…” for example “the following assumptions are invalid” or “they neglected this important factor” or “their method of collecting or analysing data is flawed” etc.
- Clearly discuss any changes that you feel should be made to the manuscript
- Include details of any references that the authors neglected to include or any of the references that are inaccurate
- Be professional and polite in your report. Do not make personal comments or criticise the authors individually.
- Be constructive, peer review is an opportunity for authors to gain valuable feedback and improve their work, so make sure your comments are helpful even if you recommend reject.
- Explain what you like about the paper as well as what needs improving.

Is the English understandable?
There is no need to correct every spelling or grammatical error in the paper. However, it is helpful to point out where the scientific meaning is unclear.

Recommendation
Finally, you should make a recommendation to the journal. The Editors of the journal will decide whether to reject, accept or reassess the work after changes are made based on the reports and recommendations of the reviewer(s).
DO...

- send your report on or before the agreed deadline;
- keep the journal informed about the progress of the report;
- follow the instructions sent from the journal;
- contact the journal if you have any questions;
- give examples to make your meaning clear;
- comment on what is interesting, important, novel or significant about the work (if anything);
- be unbiased and objective.

DON’T...

- do nothing! If you are unable or unwilling to review the paper tell the journal;
- agree to report but then fail to send it. Instead, ask for more time or let the journal know you can no longer report;
- contact the authors under any circumstances. If you have a question for the authors, ask the journal to forward it;
- make statements/claims about the work without providing an explanation and evidence;
- personally criticise any of the authors;
- just focus on correcting English; be sure to comment on quality of research;
- recommend accepting or rejecting the paper without giving reasons.
After you submit your review

Once you have submitted your report, your involvement in the review process may be finished. However, depending on the decisions made by the journal, you may be asked to look at a revised version of the paper.

**What happens to your report?**

Your report, along with that of any other reviewers, will be seen by the journal Editors. They will assess the reports and make a decision on how to proceed. If the reviewers agree, the decision will be made to either:

- Accept the paper without any amendments
- Ask the authors to revise the paper
- Reject the paper

If the article is accepted without any amendments or is rejected outright, your job will be complete. If the authors need to make revisions, you may be asked to provide further assessment of the revised manuscript. Some journals allow authors to appeal against a decision to reject their article. This may mean that you are asked to comment on the appeal or that a paper you have recommended for rejection is published.

**Revisions**

If you are asked to look at a revised manuscript, a list of changes to the article may be included (this will have been provided by the author). You should judge the revised manuscript to the same quality criteria as you did the original version. If the authors have not addressed your concerns satisfactorily, make this clear in your report.

**Adjudications**

If the reviewers do not agree, the journal may consult an adjudicator. An adjudicator is a senior reviewer or Editorial Board member. They are asked to provide an opinion on both the article and the reviews. If an Editorial Board member is used, they may be told the names of the reviewers to help them make their decision, but the authors will still only see anonymous reports.

The adjudicator may agree or disagree with your assessment of the article. If an adjudicator has been used you may receive the adjudicator’s comments with any revised version of the manuscript that you are asked to review. You should consider all reports during your assessment of the revised version.
Ethical issues

Reviewers follow a set of rules in how they assess papers. Many journals have their own specific ethical policies that you should read (e.g. the ethical policy of IOP is at publishingsupport.iopscience.org), but there are also some general rules for reviewers that are common to all journals in science.

Conflict of interest
Sometimes, you may have a potential conflict of interest in reviewing a particular paper. For example:

- You may be a close colleague of the authors
- You may have helped the authors with their work
- You may be involved in a directly competing effort in the same research area
- You may be involved in a business that would benefit from the authors’ work if it is accepted by the journal

If any of the above apply to you, or if for any other reason you feel uncomfortable reviewing a specific paper, you should inform the journal so that they can decide if a different reviewer is needed. It is OK for you to decline to review a paper if you have a potential conflict of interest, and it is important you declare any such conflict at this early stage to avoid any later accusations of bias.

Papers you are asked to review are confidential
Any paper sent to you for review should be treated as confidential until it is published in a journal. You should not tell others of its contents, or that you have been asked to review it. In some cases, you may find you wish to consult a colleague for a second opinion on a paper, but in that case you should check with the journal first. The authors need to be confident that if they have major new findings to report, no-one will take unfair advantage from having seen the paper as a reviewer, or try to steal their ideas.
Ethical issues
(continued)

**Anonymity**
With journals that operate a single- or double-blind peer-review policy, authors are not told who the reviewers for their paper are. Some journals now offer open peer-review, in which the reviewers identity is made known to the authors. You should check the peer review policy of the journal before accepting any invitation to review. Reviewers’ identities will always be known to the journal’s Editors though, so do not say anything in your report that you would not be prepared to justify if required.

Names of reviewers may sometimes also be revealed to members of a journal’s Editorial Board, but this is treated as confidential information. It is important that you send your report – even if it is entirely positive – to the journal and not to the authors directly, and do not disclose your identity unless you have been asked to do so.

**Misconduct**
Sadly, a minority of authors try to advance their careers unethically by either stealing the work of others (plagiarism) or by trying to publish the same results several times in different places (duplicate publication). Both are considered unethical practices by the scientific community. Reviewers play an important role in detecting misconduct of this kind. If you suspect that the paper you have been asked to review has been plagiarised, or if you have been asked to review the same paper by another journal at the same time, then you should contact the journals immediately with specific details of what you have discovered. The journals can then investigate further and take appropriate action.

Several sophisticated tools exist to help journals detect plagiarism today. For example, IOP journals use CrossCheck – a database of published works that we screen new submissions against to spot any that reproduce material from already-published papers. With such tools, and with the help of vigilant reviewers, we are better able to stop those who engage in misconduct.
Frequently asked questions

Why should I become a reviewer?
Reviewing is an important responsibility that comes with being part of the scientific community and it is expected that all active scientists will undertake reviewing duties from time to time. Acting as a reviewer not only helps you to stay up to date with the latest developments in your field but is also commonly recognised as a sign that you are progressing in your career. Scientists will often mention in their CV or resume that they have acted as reviewer for a journal. IOP also gives awards to their best reviewers, and many journals offer reviewers a discount on article publication charges.

Will I be paid to review an article?
Usually not.

Will I get credit for reviewing?
We believe that reviewers should be recognised for their contribution to science, without risking their anonymity. IOP Publishing has partnered with Publons, a free service that enables you to track, verify and showcase your peer-review contributions. You will get credit even if the article is never published, and your anonymity is completely protected. Find out more at www.publons.com/in/iop. IOP is proud to recognise excellence in reviewing, and each year our journal editorial teams select the best reviewers of the year based on the quality, quantity and timeliness of their reviews. Each journal chooses one person to receive the Reviewer of the Year Award, and selects a number of other excellent reviewers to receive Outstanding Reviewer awards. Visit publishingsupport.iopscience.org/reviewer-awards to find out more.

How much time will it take to assess a paper and write a report?
It depends on many factors including: the quality of the manuscript, your level of expertise, the subject and your own way of working. In some fields 2–3 hours would be enough; in other fields, it could take 2–3 weeks. You should ask your colleagues how long they spend on a review task.

Can I extend the deadline for submitting my report?
When you are first asked to review a paper, the journal will usually suggest a deadline for submitting your report. If you find you cannot meet this deadline, contact the journal to request an extension or to decline.

Will the authors be told who has written the report(s)?
It depends on the review policy of the journal. If the journal uses single- or double-blind peer review, the reviewers’ identities will not be disclosed. If the journal uses open peer review, the authors will be able to see the reviewers’ names. Most IOP journals use single- or double-blind peer review. Some offer authors the choice.

If I am an expert in only part of the paper what should I do?
You can still write a report and send it to the journal but make it clear which parts you are not able to assess.

Can I consult a colleague about a paper that I have been asked to review?
You may consult a colleague about a paper but always ask the journal if this is OK before doing it.

How long should my report be?
There is no set length for a report. It will depend on the manuscript that you have been asked to assess. However, if it is less than 200 words your report is probably not detailed enough.

If I think the paper is incremental, what should I do?
Tell the journal that you think it is incremental and provide a reference or references to support this.
Frequently asked questions
(continued)

What should I do if the authors refer to unpublished work?
It may be possible for the journal to obtain a copy for you from the authors. You should ask for this if you feel you cannot assess the work without it. However, authors should not make frequent references to unpublished work to support their paper.

Do I have to correct all spelling, grammar or use-of-English mistakes in a paper I have been asked to review?
No. Reviewers are not usually asked to do this as journals have copy editors who can correct minor problems with the language. However, if the paper is written so poorly that you cannot clearly understand what the authors mean, or there are so many errors that reading the paper becomes very difficult, then that should be reported back to the journal. Papers whose scientific meaning is unclear, or which have not been properly proofread by the authors before submission, are usually sent back to the authors for revision.

Will I be able to see the reports from any other reviewers?
This depends on the journal policy. If you ask to see them, sometimes the journal may be able to send them to you. If an article requires a second round of review after revision, you may be provided with any other reports so that you can assess carefully all the changes that have been made.

Where can I get more information?
This is a beginner’s guide to reviewing only and is based mainly on IOP journal processes. There are many other sources of information, including your supervisor and colleagues.

You can find more information about peer review at the following websites:
• IOP Publishing support publishingsupport.iopscience.org
• How to Review: Publons Academy publons.com/community/academy

Where this guide refers to third-party websites and/or other third-party sources of information, it is not intending to imply any direct link with those third parties, nor does IOP Publishing warrant, or accept responsibility for, the quality or availability of any information contained therein. Where accessing any third-party websites, you should ensure that you read any legal information on those websites before making use of and/or relying on any information obtained from them.

Reviewer of the Year awards
Reviewers play a vital role in scholarly publishing, helping to improve and highlight the most important work in their field. We want to recognise and reward these contributions, so each year our journal Editorial teams select the best reviewers of the year based on the quality, quantity and timeliness of their reviews.

Each journal chooses one person to receive the Reviewer of the Year Award, and selects a number of other excellent reviewers to receive Outstanding Reviewer awards.

Visit publishingsupport.iopscience.org/reviewer-awards to find out more.
Adjudicator
An additional reviewer who is asked to consider an article if two or more reviewers disagree in their recommendation. The adjudicator typically considers both the paper and the reviewer comments already obtained before reaching a final decision.

Article type
Journals publish more than just research papers. Many have several different types of article, each with a different purpose. Reviewing guidelines are usually made available for each by the journal so that reviewers know what standards to apply for the article that they have been sent. Some examples of article types are:

- **Research papers**: The main article type used by most journals. Reports new research in a detailed form.
- **Letters**: Shorter articles, often with a special urgency or high importance, describing new research but not in as much detail as in a full paper.
- **Reviews**: Articles reviewing progress in an area, often with extensive reference lists.
- **Comments**: Short articles commenting on a previously published work.
- **Corrigenda/Errata**: Very short articles that correct an error in a published paper.

Conflict of interest
If you are a colleague of the authors, helped with the authors’ research, are in direct competition with the authors, or stand to benefit financially if the authors’ paper is published, then it is not appropriate for you to act as the reviewer for that paper. This situation is called having a “conflict of interest”.

Double-blind review
An system of reviewing used by a few journals. Reviewers are not told who wrote the paper they are reviewing, and the authors are not told the identity of any reviewers.

Editorial Board members
Senior researchers who support the journal staff in maintaining and developing the journal. On some journals, Editorial Board members run the peer-review process, on others they act in an advisory capacity.

Incremental publishing
Work that makes only a minimal/insignificant advance over previously published work.

Open peer review
An alternative peer-review model where the identity of the reviewers is made public and all reports are signed.

Plagiarism
A form of scientific misconduct where the authors copy results or material from someone else’s work, claiming it is their own.

Quality rating
A ratings system used by IOP as a measure of the quality of a manuscript. Reviewers are asked to rate papers against a quality ranking on the reviewer report form.

Revision
A step in the process where authors are asked to revise their article in response to a list of specific comments from reviewers and/or Editors.

Self-plagiarism
A form of scientific misconduct where authors reproduce large amounts of their own previously published work and claim it is new material.

Single-blind review
A system of reviewing where the authors are not told who the reviewers for their paper are, but the reviewers know who the authors are. Most IOP journals use this system of reviewing.
IOP publications

- 2D Materials
- Advances in Natural Sciences: Nanoscience and Nanotechnology
- Applied Physics Express
- The Astronomical Journal
- The Astrophysical Journal
- The Astrophysical Journal Letters
- The Astrophysical Journal Supplement Series
- Biofabrication
- Bioinspiration & Biomimetics
- Biomedical Materials
- Biomedical Physics & Engineering Express
- Chinese Physics B
- Chinese Physics C
- Chinese Physics Letters
- Classical and Quantum Gravity
- Communications in Theoretical Physics
- Convergent Science Physical Oncology
- ECS Journal of Solid State Science and Technology
- ECS Transactions
- Electrochemical Society Interface
- Electronic Structure
- Engineering Research Express
- Environmental Research Communications
- Environmental Research Letters
- EPL (Europhysics Letters)
- European Journal of Physics
- Flexible and Printed Electronics
- Fluid Dynamics Research
- Functional Composites and Structures
- International Journal of Extreme Manufacturing
- Inverse Problems
- IOP Conference Series: Earth and Environmental Science
- IOP Conference Series: Materials Science and Engineering
- IOP SciNotes
- Izvestiya: Mathematics
- Japanese Journal of Applied Physics
- Journal of Breath Research
- Journal of Cosmology and Astroparticle Physics
- Journal of Instrumentation
- Journal of Micromechanics and Microengineering
- Journal of Neural Engineering
- Journal of Optics
- Journal of Physics A: Mathematical and Theoretical
- Journal of Physics B: Atomic, Molecular and Optical Physics
- Journal of Physics Communications
- Journal of Physics G: Nuclear and Particle Physics
- Journal of Physics: Complexity
- Journal of Physics: Condensed Matter
- Journal of Physics: Conference Series
- Journal of Physics: Energy
- Journal of Physics: Materials
- Journal of Physics: Photonics
- Journal of Radiological Protection
- Journal of Semiconductors
- Journal of Statistical Mechanics: Theory and Experiment
- Journal of the Electrochemical Society
- Laser Physics
- Laser Physics Letters
- Machine Learning: Science and Technology
- Materials Research Express
- Measurement Science and Technology
- Methods and Applications in Fluorescence
- Metrologia
- Modelling and Simulation in Materials Science and Engineering
- Multifunctional Materials
- Nano Express
- Nano Futures
- Nanotechnology
- New Journal of Physics
- Nonlinearity
- Nuclear Fusion
- Physica Scripta
- Physical Biology
- Physics Education
- Physics in Medicine & Biology
- Physics World
- Physics-Uspekhi
- Physiological Measurement
- Plasma Physics and Controlled Fusion
- Plasma Research Express
- Plasma Science and Technology
- Plasma Sources Science and Technology
- Progress in Biomedical Engineering
- Progress in Energy
- Publications of the Astronomical Society of the Pacific
- The Planetary Science Journal
- Quantum Electronics
- Quantum Science and Technology
- Reports on Progress in Physics
- Research in Astronomy and Astrophysics
- Research Notes of the AAS
- Russian Chemical Reviews
- Russian Mathematical Surveys
- Sbornik: Mathematics
- Semiconductor Science and Technology
- Smart Materials and Structures
- Superconductor Science and Technology
- Surface Topography: Metrology and Properties
BECOME A MASTER OF PEER REVIEW

Develop critical career skills
10 modules designed by renowned researchers, journals editors, and Nobel Prize winners to give you the skills and confidence to review papers in your field.

Build your profile as an expert in your field
Receive an official certificate and badge on your Publons profile, certifying your skills as a peer reviewer.

Connect with editors & start reviewing
Break into the world of peer review to see the latest research and develop your own manuscript-writing skills.

Help defend and improve science and research
Use your expertise to help protect the quality and integrity of research as an active peer reviewer.

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