The Scientific Publication Process

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Physics 496

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You've discovered a supermassive black hole at the center of the universe!

Now what ???

Write the paper.

2

Who, me?

Who decides when a paper should be written?

Usually, the research advisor (but can be influenced by justification from students)

Who writes the paper? Usually …

- The student or postdoc who led the project the most (intellectual contribution, time spent working) writes the draft.
- All major contributors agree on outline, figures, main ideas.
- There's lots of input from the research advisor.
- Secondary contributors (just providing materials or making characterization measurement) may be less involved, but have to agree with final draft.

Who gets to be an author?

Anyone who has made a **significant** contribution (i.e., could the paper, including figures, have been written without this contribution?). Helping a friend for a day usually doesn't count.

The contribution could be intellectual (ideas, data analysis) or practical (managing equipment, taking data).

It's good to discuss authorship while working on a project ("if I make these measurements would I be on a manuscript that results from them?"). Aim for generosity but not misrepresentation.

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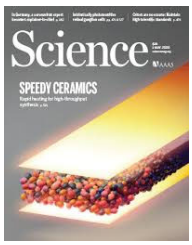
How long should the paper be? In what style? For what audience? This all depends on the publication you choose …

Visit journal websites, read description:



"*Science* is a weekly, peer-reviewed journal that publishes significant original scientific research, plus reviews and analyses of current research and science policy. We seek to publish papers that are influential in their fields or across fields and that will substantially advance scientific understanding. Selected papers should present novel and broadly important data, syntheses, or concepts. We welcome submissions from all fields of science and from any source."

"Journal of Physics: Condensed Matter covers the whole of condensed matter physics including soft matter, biophysics and the physics of chemical processes. Papers may report experimental, theoretical and simulation studies. We will also consider papers that cover the fundamental physics of applications and devices….To be publishable in *Journal of Physics: Condensed Matter* papers must fit the scope of the journal and meet the highest scientific quality standards. In addition, they should contain significant and original new science and make a substantial advance within a particular area of condensed matter physics."

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It's useful to look at journal impact factors

rank	Journal	Total Cites	Impact Factor	5-year Impact Factor
1	Reviews of Modern Physics	37,647	42.860	52.577
2	Nature Photonics	18,623	29.958	32.342
3	Advances in Physics	5,026	18.062	27.921
4	Surface Science Reports	4,410	24.562	25.642
5	Physics Reports	21,386	22.910	25.010
6	Nature Physics	20,321	20.603	20.059
7	Nano Today	3,855	18.432	19.202
8	Living Reviews in Relativity	1,600	16.526	18.310
9	Advances in Optics and Photonics	660	9.688	18.194
10	Reports on Progress in Physics	11,421	15.633	16.627

doi:10.1371/journal.pone.0143460.t004

But impact factor is just one element. Also consider:

- Reputation in field (PRB, PRA are highly reputable but may have smaller impact factors)
- How broad or specific to field your results are
- How many pages you need to fully describe results

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Time passes … You write a beautiful paper. You want to submit to *Physical Review Letters*.

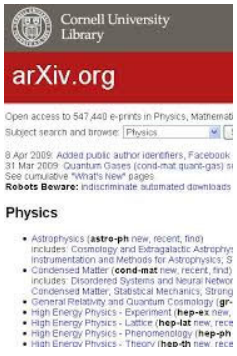
But *PRL* has a long review process … and you want people to know about your results NOW.

- you want the broader community to vet the results before publication
- PRL subscription is expensive and not everyone has access to it
- you want to claim priority

Solution: submit to the Physics arXiv, https://arxiv.org/ …

The Physics arXiv is "an open access repository of electronic preprints"

"The physics archive was started in August 1991 and includes astro-ph, cond-mat, gr-qc, hep-ex, hep-lat, hep-ph, hep-th, math-ph, nucl-ex,nucl-th, physics and quant-ph."



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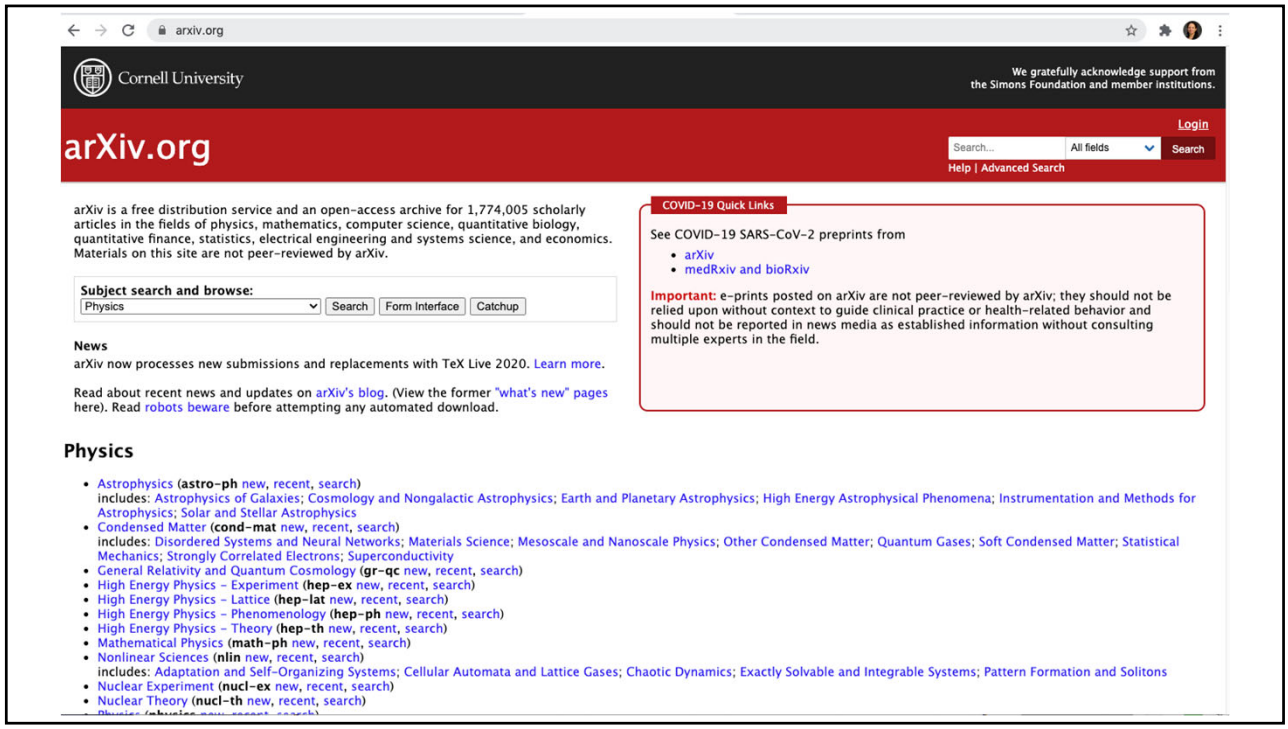

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In some fields, researchers submit to only arXiv, and not to traditional peer-reviewed journals (this is more common for large collaborations).

You generally cannot submit a version to arXiv that has already gone through an editorial process at a journal.

Many scientists scan through arXiv every day for the latest and greatest in the field.

In the meantime, you've submitted your paper to PRL. What now?

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(Note: all slides that follow are shamelessly pasted from a presentation by S. Lance Cooper, Prof. of Physics, Director of Graduate Studies, and former Divisional Editor for Physical Review)

(Also, the following is for a Physical Review submission, but a very similar process is followed at all peer-reviewed journals)

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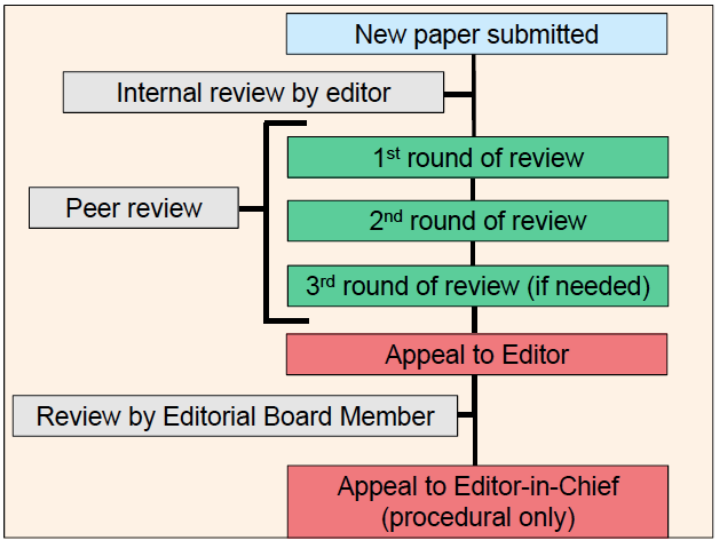
Summary of the *Physical Review* Review Process



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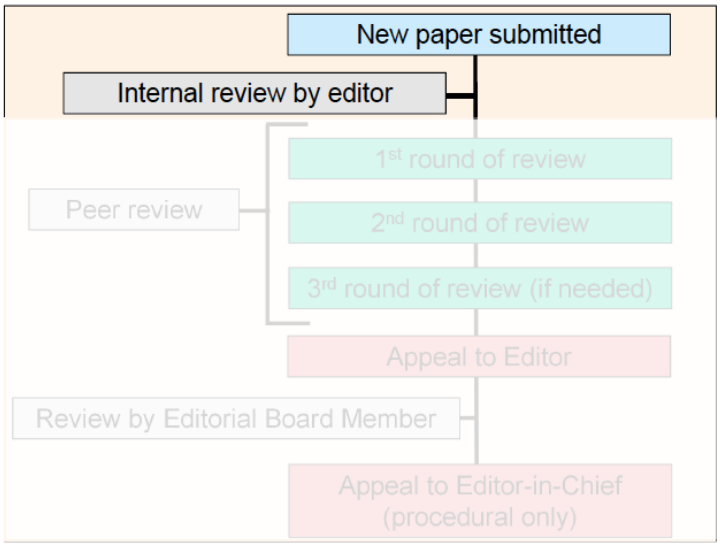
The Internal Editorial Review Process



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The Internal Editorial Review Process

What Is Internal Review?

-- Editors assess the paper and decide whether to send out to external referees or **Reject Without External Review**

-- If external review is needed, editors select the referees

To see full lecture, go to: https://physics.illinois.edu/careers-seminar/UIUC_Physics_Career_Seminar_Antonoyiannakis.pdf

Dr. Manolis Antonoyiannakis
Associate Editor, *Physical Review B*

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The Internal Editorial Review Process

What Do Editors Look For to Make This Decision?

-- They typically focus on the ***abstract***, ***introduction***, and ***conclusions***

-- Is the quality of writing high?

-- Is the subject matter suitable for the journal?

-- What is the overall importance and quality of the paper?

-- What's the punchline of the paper, and is this of interest and appeal to the journal's readership?

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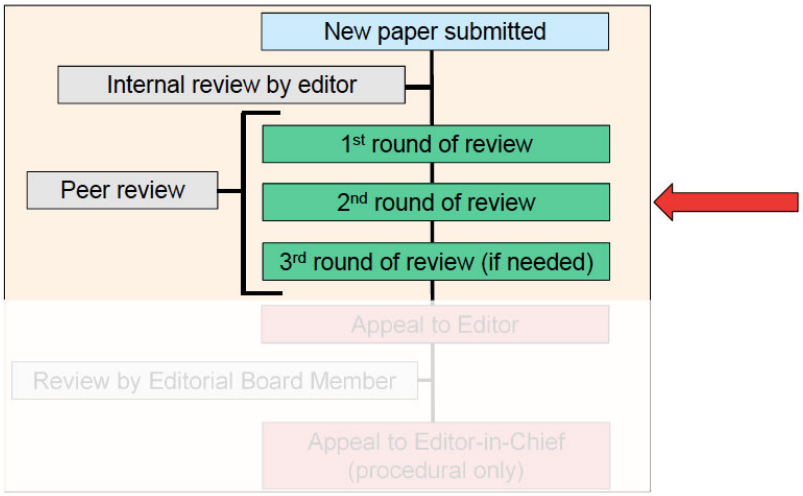
The External Review Process



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How Will Your Paper Be Judged? *Physical Review Letters* Criteria

(1). Importance

(2). Broad interest

(3). Validity

(4). Accessibility

REFEREE RESPONSE FORM
(Please include this form with your full report)
Referee Please Note: This form is not a substitute for a full report

This form is to assist the Editors and is not a substitute for your written report. It may be useful, however, as an outline for your report, which should explain why the paper does, or does not, meet our criteria.

I. Letters published in PRL must meet a high standard of importance and interest.

a) Please judge the importance of the paper to its specific field.
not important ☐ ☐ ☐ ☐ ☐ very important

b) Please judge the broad interest of the paper, apart from its importance to its specific field, to a wide spectrum of physicists.
not interesting ☐ ☐ ☐ ☐ ☐ very interesting

c) Please judge the validity of the paper.
probably not valid ☐ ☐ ☐ ☐ ☐ probably valid

II. A Letter should have an introduction and conclusion that explains, in terms accessible to a broad audience, the physics context of the work, why it is important and what has been accomplished.
Please judge the introduction and conclusion.
not accessible ☐ ☐ ☐ ☐ ☐ very accessible

III. Recommendation:
NOTE: IF YOU ARE RECOMMENDING PUBLICATION IN PRL, PLEASE PROVIDE, IN YOUR REPORT, A SEPARATE STATEMENT AS TO WHY THIS PAPER IS APPROPRIATE SPECIFICALLY FOR PRL.

a) The paper should be published in PRL as it is. ☐
b) The paper should be published in PRL after minor revisions are made, without further review. ☐
c) The paper with revisions and further review, might be publishable in PRL. ☐
d) The paper with extensive revisions, and further review could possibly be published in PRL. ☐
e) The paper should not be published in PRL. ☐

IV. Would you be willing to review the paper again? ☐ yes ☐ no
If not could you suggest alternative referees?

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Possible Referee Recommendations

III. Referee recommendation:

a) The paper should be published as it is……..( )

b) The paper should be published after minor revisions, without further review……..( )

c) The paper, with revisions and further review, might be publishable……( )

d) The paper with extensive revisions, and further review, might be publishable……..( )

e) The paper should not be published……..( )

Authors see the reviews but don't see which of these recommendations the referee selects!

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Typical Editorial Responses to a Paper Submission

1. Accepted with no changes Rarely happens!
2. Accept with minor revision
3. Major revisions needed before reconsideration
4. Outright rejection

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Interpreting Typical Editorial Responses

A Referee recommendation for "***Publication After Minor Revisions Without Additional Review***" will probably generate an editor letter that looks something like this:

"The above manuscript has been reviewed by two of our referees. Comments from the reports appear below for your consideration. ***When you resubmit your manuscript****, please include a summary of the changes made and a brief response to all recommendations and criticisms."*

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Interpreting Typical Editorial Responses

It is sometimes difficult to tell paper status from editor responses:

A Referee recommendation for "***Possible Publication After Significant Revisions and Additional Review***" will probably generate an editor letter that looks something like this:

"*We cannot accept your manuscript in its current form, but if you do decide to resubmit, then we would consider only a substantial revision.*"

May sound like rejections, but they leave the door open to resubmit with significant changes

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Interpreting Typical Editorial Responses

True rejection letters from editors are typically short, with very little in the way of a hint that you should resubmit:

Referee recommendations of "***Manuscript Should Not Be Published***" will probably generate a terse editor letter that looks something like this:

"*The above manuscript has been reviewed by our referees. On this basis, we judge that the paper is not appropriate for our journal, but might be suitable for publication in another journal, possibly with revision. Therefore, we recommend that you submit your manuscript elsewhere.*"

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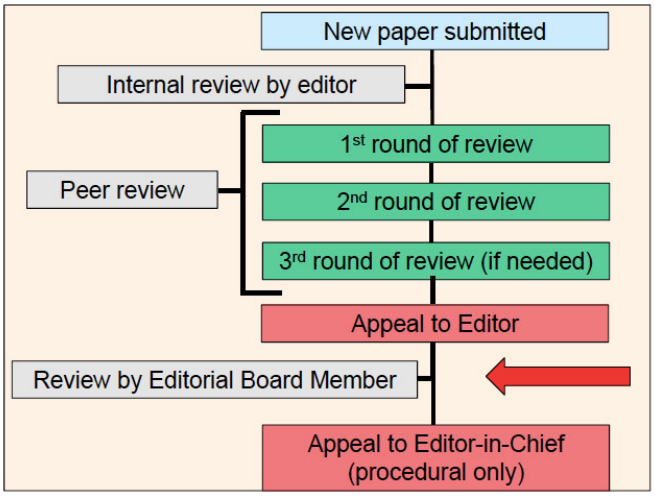
Summary of the *Physical Review* Review Process



There is an appeal process if you're not happy with your reports

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Advice for Responding to Referee Reports
A Bad Example

ELSEVIER

The Journal of Systems and Software 54 (2000) 1

www.elsevier.com/locate/jss

Editor's Corner

A letter from the frustrated author of a journal paper

Editor's Note: It seems appropriate, in this issue of JSS containing the findings of our annual Top Scholars/Institutions study, to pay tribute to the persistent authors who make a journal like this, and a study like that, possible. In their honor, we dedicate the following humorous, anonymously-authored, letter!

Dear Sir, Madame, or Other:

Enclosed is our latest version of Ms. #1996-02-22-RRRRR, that is the re-re-re-revised revision of our paper. Choke on it. We have again rewritten the entire manuscript from start to finish. We even changed the g-d-running head! Hopefully, we have suffered enough now to satisfy even you and the bloodthirsty reviewers.

I shall skip the usual point-by-point description of every single change we made in response to the critiques. After all, it is fairly clear that your anonymous reviewers are less interested in the details of scientific procedure than in working out their personality problems and sexual frustrations by seeking some kind of demented glee in the sadistic and arbitrary exercise of tyrannical power over hapless authors like ourselves who happen to fall into their clutches. We do understand that, in view of the misanthropic psychopaths you have on your editorial board, you need to keep sending them papers, for if they were not reviewing manuscripts they would probably be out mugging little old ladies or clubbing baby seals to death. Still, from this batch of reviewers, C was clearly the most hostile, and we request that you not ask him to review this revision. Indeed, we have mailed letter bombs to four or five people we suspected of being reviewer C, so if you send the manuscript back to them, the review process could be unduly delayed.

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Responding to Referee Reports

Take the referee comments seriously: they are probably trying to help and their uncertainties about your paper may indicate weaknesses in your presentation

Respond to referee comments politely and completely: persuasive logical argumentation with evidence is far more effective than angry retorts when responding to referee comments.

Make sure your Introduction, Abstract, and Conclusions convey the motivation for and punchline of your work: this is important not just for the external reviewers, but also for the internal editorial review process

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If at first you don't succeed…

Even if a paper is rejected from one journal, it may be suitable for a different journal.

Sometimes the "rejecting" journal recommends another more specialized journal.

At this point, the paper can be modified or re-written to address referee reports and/or to make it more suitable for a different journal – or it can be re-submitted as is.

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