Overview of publishing a paper

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1 Publication

The publication process

A typical course for publishing in a peer reviewed journal (e.g. Physical Review Letters, Nature) is

1. Write a manuscript (critical step)
2. Submission: send the manuscript plus cover material to the journal and optionally arXiv
3. Peer-review: receive and respond to comments from referees, revising the manuscript
4. Proofing: respond to changes requested by the editor, revising the manuscript
5. Acceptance: the manuscript will be published in an upcoming issue of the journal
6. Cataloguing: create a PURE entry for the publication

Rejection

During steps 2-5 your manuscript may be *rejected* in which case you may be given the option to make significant changes and resubmit or choose to submit to a different journal. An important of the process is choosing an appropriate journal—discuss with your supervisor.

Timescales

Peer-review may involve multiple rounds (referee comments → manuscript changes → resubmission) and generally takes the longest time; 1-6 months is not unusual. Proofing (or 'corrections') is typically done on the timescale of weeks. Generally, the length of each of these steps is going to increase with the length and complexity of your manuscript as well as the number of co-authors.

2 OCRID iD

Along with your name and institution you will often be allowed to include an OCRID iD, which is a persistent digital identifier that distinguishes you from any other researcher. To do so, you will firstly need to register for an OCRID iD online. You can add a biography and web links to your profile here, but that is not necessary.

3 Collaborative tools

It is highly recommended to use some form of version control system (VSC) when writing and editing your manuscript. Overleaf is a popular tool for collaborating on LaTeX documents. Note that a paid subscription ('premium') is required to start a project with more than 2 collaborators. It provides a browser-based editor as well as Git integration (for projects started by a premium user).

4 PRL + arXiv publication with Supplementary Material

If you are submitting a manuscript to Physical Review Letters (PRL), it's quite likely (in light of the 3,750 word limit $\sim$ 4 pages) you will want to attach a supplementary document containing additional data, explanation or figures.[1]

PRL accept as a submission a raw (`.tex`) file for the Letter and, optionally, a compiled (`.pdf`) file for Supplementary Material. Notably, any citations made in the supplement should be included in the Letter's bibliography. On the other hand, arXiv expects a single `.tex` which should include the supplementary material. A reliable way[2] to satisfy both endpoints is to write the Letter and Supplementary Material in the *same* document—separated by a newpage—and only at the end of the writing process separate out the two parts for the PRL submission whilst keeping the full document for arXiv. The suggested workflow is as follows.

[1] If you do not have supplementary material, the submission is straightforward—see Section 4.6.

[2] If you would like to waste time producing a supplement that refers correctly to the main bibliography and so does not require its own reference list, see `prl_arxiv_outdated.pdf` (not recommended).

4.1 Preparation

Write your manuscript (Letter) and supplement in the same document (`main.tex`), with the bibliography placed between the two—see `prl_template.tex` for a template. Once complete, it is good practice to remove any comments and non-functioning code from `main.tex`: this file will be visible to the editors and moreover be publicly available on arXiv. Recompile `main.tex` and check the output `.pdf`.

Tip. You will make life easier later if you use a labelling scheme for equations, figures etc. that distinguishes between the Letter and supplement. For example, using `L:eq:`, `L:fig:`, to prefix Letter equations and figures, and `S:eq:`, `S:fig:` to prefix ones that occur in the supplement.

4.2 arXiv submission

Upload `main.tex`, the auxiliary `.bbl` file (`main.bbl`) and any figures included in `main.tex` to the arXiv submission server (you will need to Register if you have not before now). To do this from the command line:

```
$ mkdir arxiv    # new directory for submission
$ cp main.tex main.bbl fig*.pdf arxiv/  # include all figures
$ cd arxiv
$ tar -cvf arxiv_upload.tar *
```

The single file `arxiv_upload.tar` can then be uploaded directly to arXiv.

Note you do *not* upload a `.pdf`. Instead `main.tex` is compiled using `main.bbl` on arXiv's servers. During submission you will have the opportunity to check the result of this compilation. You will also be asked to add authors, an abstract and a comment that appears on the submissions page e.g. `4 pages, 2 figures plus Supplementary Material`.

4.3 Generate manuscript (Letter) files for PRL

Create two directories `letter` and `supp` with copies of the files:

```
letter/
    - main.tex
    - main.bbl
    - fig1.pdf, fig2.pdf... # figures/data required in Letter
supp/
    - main.tex → supp.tex
    - refs.bib
    - figSM1.pdf, figSM2.pdf... # figs/data required in supplement
```

where as indicated a copy of `main.tex` was renamed to `supp.tex` in `supp/`. We first work with the Letter files.

Move into `letter/` (`cd letter`) and edit `main.tex`:

- Remove *all* supplementary text (content *between* `\bibliography{refs.bib}` and `\end{document}`)
- Replace `\bibliography{refs.bib}` with `\input{main.bbl}`
- Remove any `\typeout` arXiv command

The document should now be compiled *twice* using LaTeX only i.e. *not* Biber. Since most GUI editors run Biber automatically, I recommend doing this from the command line:

```
$ pdflatex main.tex && pdflatex main.tex
```

The two compilations are required to get hyperlinks working. Check the output `main.pdf`. This should have the Letter with all hyperlinks (refs/cites) present and functional.

`main.tex`, `main.bbl` and any Letter figures/data are now ready to be uploaded to the APS submission server. Again, a single tarball can be uploaded directly:

```
$ tar -cvf prl_upload.tar main.tex main.bbl fig1.pdf fig2.pdf
```

Do not include `main.pdf` or other auxiliary files produced when you ran `pdflatex`. That being said, the `main.aux` produced will be useful for generating the supplementary file—*copy this to* `../supp/`.

4.4 Generating supplementary file for PRL

Move into `supp/` which in addition to `supp.tex` (recall this was a copy of `main.tex`), `refs.bib` and supplementary figure files should now have a copy of `main.aux` generated from the previous step.[3] Edit `supp.tex`:

- Remove *all* Letter text (content *after* `\begin{document}` up to and including `\bibliography{refs.bib}\clearpage`)
- Before `\begin{document}` add

  ```
  \usepackage{xr}
  \externaldocument[S-]{main}
  \renewcommand{\bibnumfmt}[1]{[S#1]}
  \renewcommand{\citenumfont}[1]{S#1}
  ```

  and just above `\end{document}` add

  ```
  \bibliography{refs.bib}
  ```

The `xr` package uses `main.aux` to validate references to labels (equations, figures etc.) in the Letter text which were removed from `supp.tex`. The optional `[S-]` argument of `externaldocument` means that these labels must be prefixed with `S-`. You can skip this option, in which case you will not need to edit any of the labels in `supp.tex`. However, you will probably want to edit these anyway because they will currently be broken hyperlinks i.e. appear clickable but without a defined destination: changing `ref{}` to the starred variant `ref*{}` removes the hyperlink whilst still printing the correct label text. Demanding the prefix means you will be unlikely to miss any (because if you don't adjust the prefix then the reference will be undefined).

In summary, replace in `supp.tex` all reference commands to Letter labels with starred reference commands with the same label plus a `S-` prefix. If you were sensible enough to use a standardise labelling scheme such as `L:eq:`, `L:fig:`, for Letter equations, figures then all you need to do is a search and replace:

```
ref{L: → ref*{S-L:
```

Finally, compile `supp.tex` as normal and check the output `.pdf`. If everything looks good, upload this `.pdf` alongside the paper files on the APS server.

[3] If you used the original `main.aux` you will get many `multiplydefined` warnings when compiling `supp.tex` because this `.aux` already contained definitions of all the supplement labels.

4.4.1 Bibliography changes by the copy-editor

During proofing, the copy-editor will change the order of references in your bibliography so that any citations made in the supplementary material but *not* in the Letter are effectively inserted immediately after the first time you cite the supplementary material in the Letter text. Suppose, for example, you cite articles A, B, C, D, E in the main text where C is the Supplementary Material, and A, D, F, and G in the supplement itself. The PRL copy-editor will produce a reference list

1. A
2. B
3. C
4. F
5. G
6. D
7. E

whereas the order in the bibliography you submitted in the Letter (and also in the arXiv version) will have A-to-G consecutive. You could pre-empt this using `\nocite` commands, e.g.

```
See Supplementary Material~\cite{C}.\nocite{F,G} ...
```

for the above example, but this isn't necessary and will make the order of citations in the arXiv submission look odd.

4.5 Wrap-up

In summary, we produced:

- An arXiv version which contains a Letter, a bibliography, and supplementary material with citations linking to the Letter's bibliography
- A Letter for PRL with a bibliography that includes citations made in the supplement. When you submit these will appear at the end of the bibliography, but during proofing the copy-editor will move them to immediately after the supplementary material citation.
- A supplementary file for PRL with it's own bibliography

PRL ask you to add a description to the citation to the supplement, including a mention of the references it contains. An example `.bib` entry would be

```
@misc{supplement,
  note = {See Supplemental Material at
      \url{...} for
     discussion of:
     the weak system-environment coupling limit,..., which
   includes Refs. [52-78].}
}
```

Here the url will be provided by PRL during proofing, and `Refs.[52-78]` are the citations made in the supplement but not in the Letter. As explained above, these will be at the end of the bibliography when you first submit the Letter, but moved earlier by the copy-editor.

4.6 Without Supplementary Material

If you do not intend to write a supplement for the Letter, then you only have a single `main.tex` and the submission process is

- Upload `main.tex`, `main.bbl` (generated during compilation) and any figure files to a new arXiv submission
- Upload `main.tex`, `main.bbl` and any figure files to a new APS submission.

Be careful to check the output `.pdf` generated by both arXiv and APS.

5 Future notes and contributing

The final step, cataloguing, refers to entering information of the publication and any supporting data into the University's information system, PURE. I forgot to write notes on this when I last used PURE, so if you are reading this whilst publishing your own work and would like to make a few notes explaining the process I would be happy to include them. Likewise if you have any comments on publishing in other journals (in particular non-APS ones); contributions are welcome. If I do submit another APS journal, I am minded to include a step-by-step on navigating the online submission portal.