

Reproducibility of mathematical data: practical 1

(Alex Elzenaar, 2/8/22)

Important Warning

We are going to look at real MathRepo pages that were written by people that you know. We have tried to choose examples that are overall good examples of the kinds of things you should try to produce, but that might have one or two flaws. Please be nice and stay constructive in any criticism you come up with.

Have a look at the MathRepo page: <https://mathrepo.mis.mpg.de/StagedTreesWithToricStructures/index.html>

Don't worry about the mathematics, we are just interested in the practical aspects of reproducibility. It is not important for you to get through everything here unless you find you have a lot of time, it is only important to us that you end up answering the following questions:

1. List three things that are good practice which this page does.
2. List three things you would change or improve.
3. Do you think that there were any particular challenges faced by the authors of this page when they made it?

1 Work out what results you want to reproduce, and find them.

Check that you can find the original paper, and that the original paper links to this page! Do you think that the MathRepo page contains enough context that you would be able to start understanding what the point of the work is, if you had enough time? Who is the audience of the page? (People who have already read and understand most of the paper? People working through the paper for the first time? People trying to work out if they want to read the paper?)

We will restrict ourselves to the `Mathematica` code and related data. The `Mathematica` code is split into two parts, the base code and some examples. Make sure you can find both pages. Is the code on each page in a format which is easy to download to your computer?

2 Get the tools that the authors used.

Can you tell which `Mathematica` version the authors used? What about the computer operating system which they were running on?

In any case, at this point try to spin up a copy of `Mathematica`. Here is how to do it from a terminal if you are on a UNIX-like computer (including MacOS X) connected to the MPI network:

```
ssh -Y [your mpi username]@hydra.mis.mpg.de
ssh -Y compsrv
module load mathematica
mathematica
```

3 Modify the tools so that they are in a form which we can actually use.

What do you need to copy and paste to get Examples 1 and 2 running? [Hint: you should need to copy code from both pages we mentioned in Section 1.]

Does the code run? If not, try to diagnose why. Ask for help if you want.

4 Actually reproducing the results.

We now assume you have managed to get the code running.

Do the authors give enough information to check that the output is correct (for instance, example output)? Is the result correct?