



# MATHREPO

MATHEMATICAL RESEARCH-DATA  
REPOSITORY

Leonie Kayser

October 9, 2023

Maths meets information specialists

**MAX-PLANCK-INSTITUT**  
FÜR MATHEMATIK  
IN DEN NATURWISSENSCHAFTEN

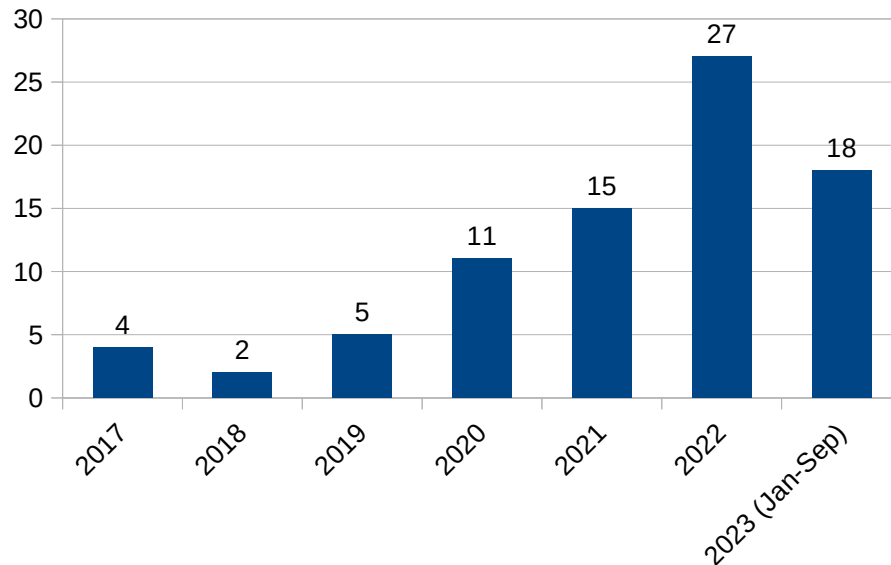




mathrepo.mis.mpg.de

- Run by the MPI MiS
- Based on the institute's GitLab
- Planned to be maintained at least for the next decade (hopefully longer)
- Blog-style entries, high flexibility in how you display your content
- No hard quality control
- Until now at least 134 (co)authors using 20 different types of software

MathRepo pages per year





mathrepo.mis.mpg.de



**MATHREPO**  
MATHEMATICAL RESEARCH-DATA  
REPOSITORY

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 / Mathematical Research Data



# MATHREPO

MATHEMATICAL RESEARCH-DATA  
REPOSITORY

This is a repository of the [Max Planck Institute for Mathematics in the Sciences](#) in Leipzig, dedicated to mathematical research data. [Research data](#) are all digital objects that arise during the process of doing research or are a result thereof. In particular, the purpose of this repository is to collect scripts and code, to explain applications of mathematical software, to showcase additional examples to paper publications, and more generally to host supplementary material developed for research projects or discussed in workshops.

This website is currently maintained by Tabea Bacher, Claudia Fevola, Ben Hollering, and Leonie Kayser. It was set up and curated by Carlos Améndola, Christiane Görgen, Lukas Kühne and Verena Morys, and Yue Ren and Mahsa Sayyary Namin from 2017 until 2022. You can contact us at [mathrepo@mis.mpg.de](mailto:mathrepo@mis.mpg.de).

MathRepo is in the process of transformation. We aim to restructure the repository so that its content meets the [FAIR Principles](#) for sustainable research. In the future, MathRepo will follow the guidelines developed by the Mathematical Research Data Initiative [MaRDI](#).



# gitlab.mis.mpg.de/rok/mathrepo

Ronald Kriemann > MathRepo

**MathRepo**  
Project ID: 1 [Leave project](#)

🔔 [Star](#) 1 [Forks](#) 8

🔖 987 Commits [4 Branches](#) [0 Tags](#) [391.7 MiB Project Storage](#)

**Merge branch 'develop' into 'master'** [...](#)  
Leonie Kayser authored 3 days ago [badb581c](#)

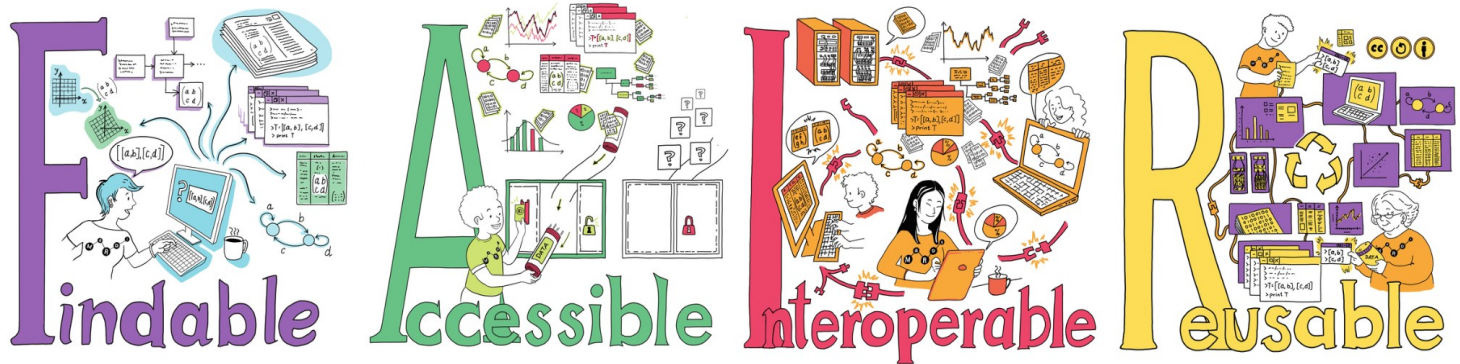
master [mathrepo /](#) [+](#) [History](#) [Find file](#) [Edit](#) [Download](#) [Clone](#)

[Add README](#) [Add LICENSE](#) [Add CHANGELOG](#) [Add CONTRIBUTING](#) [Enable Auto DevOps](#) [Add Kubernetes cluster](#) [Set up CI/CD](#) [Add Wiki](#)

[Configure Integrations](#)

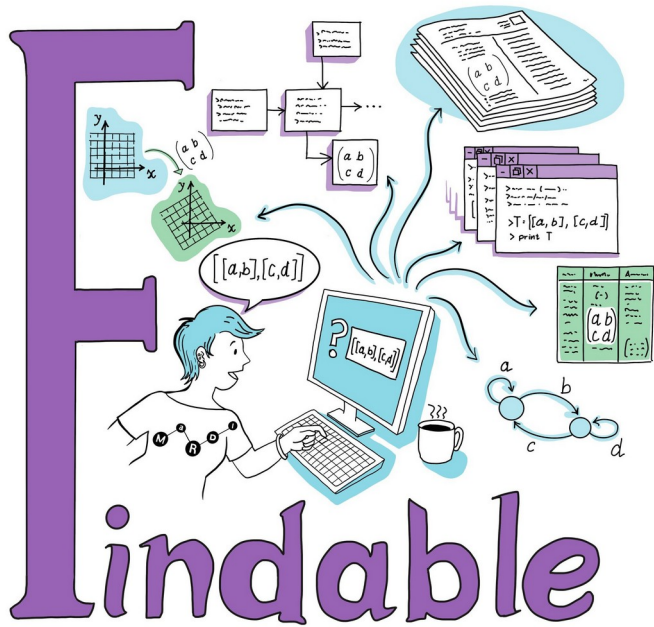
Name	Last commit	Last update
scripts		
source		
tmp		
.gitignore		
Dockerfile		
Makefile		
README.md		
requirements.txt		
template.rst		

# How



## is MathRepo?

[go-fair.org/fair-principles](https://go-fair.org/fair-principles)



- URL stable for the foreseeable future
- Findable in common search engines
- Some metadata

but:

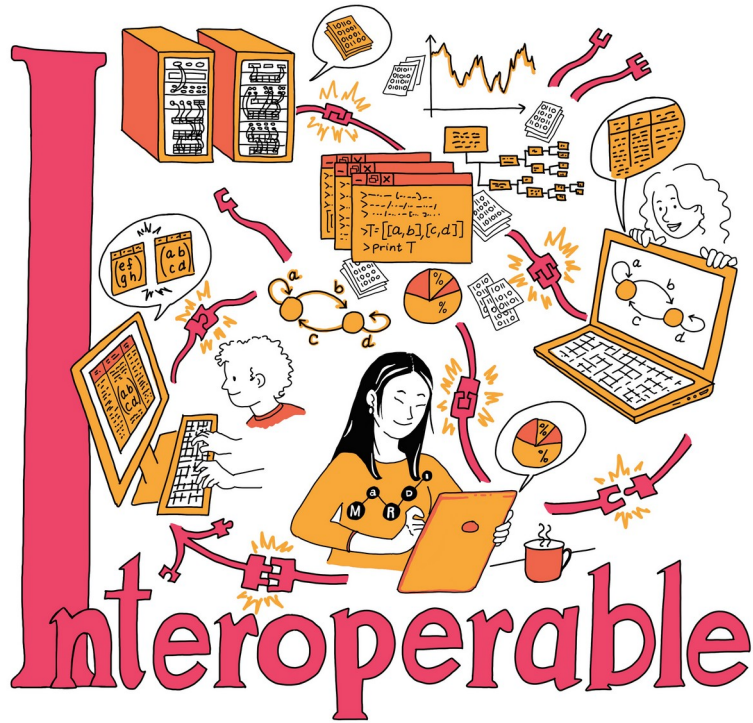
- No DOI
- Metadata is not indexed in a machine-searchable resource yet



- No pay walls
- No sign-up process for readers
- Low barrier for new contributions

but:

- No automated retrieval of (meta) data

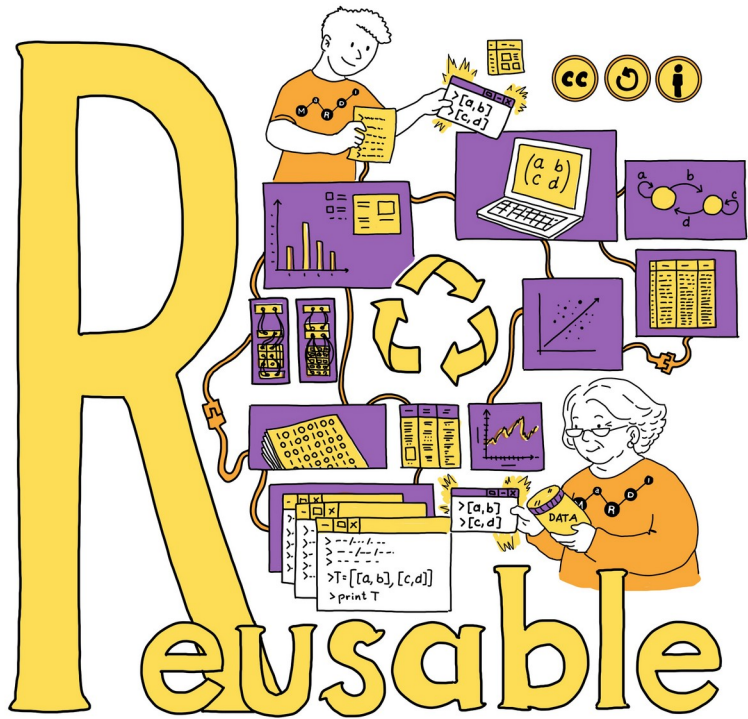


- Math with explanatory text, link to articles
- Code annotated with software name, version, date, hardware setup

but:

- Very case specific
- Reproducibility might fail
- Some projects use closed-source software (e.g. MAGMA)





- Author names and mail for contact
- Often a lot of detail provided

but:

- No license information in old pages



## Mathematical user experiences

- Tutorial on GitLab
- Personal support by the maintainers (currently Tabea Bacher, Claudia Fevola and myself)
- GIT is complicated at first
- Cloning and building the pages takes a while (currently repo is about 400MB, the build is 900MB big!) → Improve?
- Often users wish for more features



## A vision

- More features
  - Embedded interactive demos and animations
  - Better integration of notebooks (“try it online!”)
- Embedding into the MaRDI Portal
  - Automated extraction of metadata
  - Upload to Wikidata
- *“Launch your own MathRepo”*
  - We can not provide a repository for everyone (or can we? )
  - Create instructions so other institutions can start their own MathRepo



## Who is the FAIRest of them all?



Imaged by Heritage Auctions, HA.com

**For the winners:** fame and honor, some prize, a badge on the MathRepo Page

**The criteria:** Compliance with FAIR principles, good documentation and description, reproducible results, clearly stated licensing

**The occasion:** Chow lectures at MPI, October 16 - 18, 2023



# Thank you! Questions?

Special thanks to Tabea  
for a previous iteration of  
this presentation!



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