



mathrepo.mis.mpg.de

Data for and from your research

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MPI MiS Leipzig
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MATHREPO
MATHEMATICAL DATA
AND SOFTWARE

Search to start

2022

2021

2020

2019

2018

2017

CAF[®]

111

University of

Magnum

Sample

Study and Management Objectives

Mathlab

OSCAR®

References

SageMath

Singer, Aar

Inventory

 $A = \mathbb{Z}$

Terms of Use



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 Carlos Améndola, Tabea Bacher, and Claudia Fevola. It was set up and curated by Christiane Görgen, Lukas Kühne and Verena Morys, and Yue Ren and Mahsa Sayyari Namin from 2017 until 2022. You can contact us at muthrean@mis.mpg.de.

MathRepo is in the process of transformation. The current standards and requirements for contribution are outlined in the [Terms of Use](#) page. We aim to restructure the repository so that its content meets the [FAIR Principles](#)¹⁷ for sustainable research. In the future, MathRepo will follow the guidelines developed by the Mathematical Research Data Initiative [MaRDI](#)¹⁸.

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MATHREPO
MATHEMATICAL DATA
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Search docs

2022

2021

2020

2019

2018

2017

GAP

Julia

Macaulay2

Magma

Maple

Mathematica

Matlab

OSCAR

Polymake

SageMath

Singular

Events

A-Z

Terms of Use

🏠 • 2022

2022

- Tropical Invariants for binary forms and reduction types of Picard curves
- Classifying one-dimensional discrete models with maximum likelihood degree one
- Recovery of Plane Curves from Branch Points
- Selfadhesivity in Gaussian conditional independence structures
- Farey polynomials
- Bayesian Integrals on Toric Varieties
- No eleventh conditional Ingleton inequality
- The Geometries of Jordan nets and Jordan webs
- Introduction to Toric Geometry
- The Hirota Variety of a Rational Nodal Curve
- Lines on \mathbb{P}^3 -adic and real cubic surfaces
- Third-Order Moment Varieties of Linear Non-Gaussian Graphical Models
- Fiber Convex Bodies
- Counting Cubic Hypersurfaces

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What is research data?

"The recorded factual material commonly accepted in the scientific community as necessary to validate research findings."¹

"Alle digital vorliegenden Daten, die während des Forschungsprozesses entstehen oder ihre Ergebnisse sind."²

This is much broader than data alone!

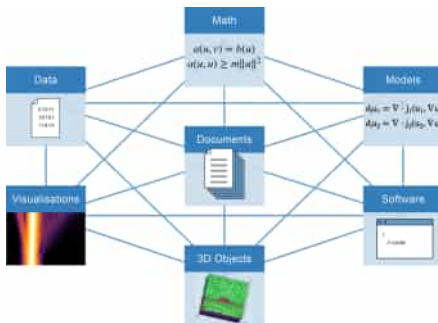
¹<https://www.ukri.org/about-us/epsrc/our-policies-and-standards/policy-framework-on-research-data/scope-and-benefits/>

²<https://www.forschungsdaten.info/themen/informieren-und-planen/was-sind-forschungsdaten>



What is research data in mathematics?

- mathematical documents: papers, proofs, formulae,...
- notebooks, domain-specific research-software packages and libraries, computer algebra systems, programmes, scripts
- simulation data
- formalised mathematics
- collections of mathematical objects
- mathematical models
- ...





What is the status quo with research data in mathematics?

- research data which was promised in papers and stored on long-gone personal homepages
- research data which would run on one computer but not on another
- research data blocked by pay walls
- research data which would just not provide the promised results

C. Fevola and Ch. Görgen (2022). The mathematical research-data repository MathRepo. Accepted by the Computer Algebra Rundbrief, Nummer 70. Preprint available on [arxiv:2202.04022](https://arxiv.org/abs/2202.04022) [math.HO].



How to handle research data in mathematics

- Findable
- Accessible
- Interoperable
- Reusable



Mark Wilkinson, Michel Dumontier, IJsbrand Jan Aalbersberg, Gaby Appleton, et al. The FAIR guiding principles for scientific data management and stewardship. Scientific Data, 3(160018), 2016.



Mathematical Research Data Initiative

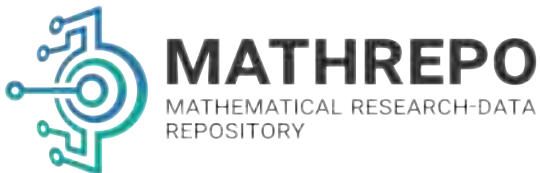


- 15 institutions and partners
- Kick-Off in November 2021
- 1 out of 30 consortia across all scientific disciplines
- 28 (full-time equivalent) employees and 10 mio. euro funding over 5 years

www.mardi4nfdi.de



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- run by the institute
- planned to be maintained at least for the next decade
- 51 entries in total
- no hard quality control
- block-style entries, high flexibility in how you display your content



How FAIR is MathRepo?

2021
2020
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17



Talk to me if you want to know more about ...

- MaRDI
- Repositories & MathRepo
- how to make your research data FAIR



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