

swMATH – a new information service for mathematical software

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Project goals

- Creation of a **comprehensive database** with information on **mathematical software**
- Combined treatment of mathematical **publications and software** (see right)
- Semi-automatic update tools for reducing manual effort and maintenance costs
- Community integration

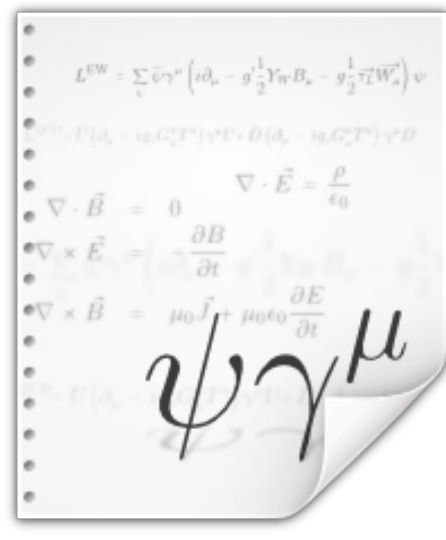
Project key facts

- Funding period: 2011 - 2013
- Principal institutions: Mathematisches Forschungsinstitut Oberwolfach (MFO) and FIZ Karlsruhe
- Cooperating institutions: ZIB, WIAS, MATHEON, Felix Klein Center
- Hosting and long-term maintenance through FIZ Karlsruhe

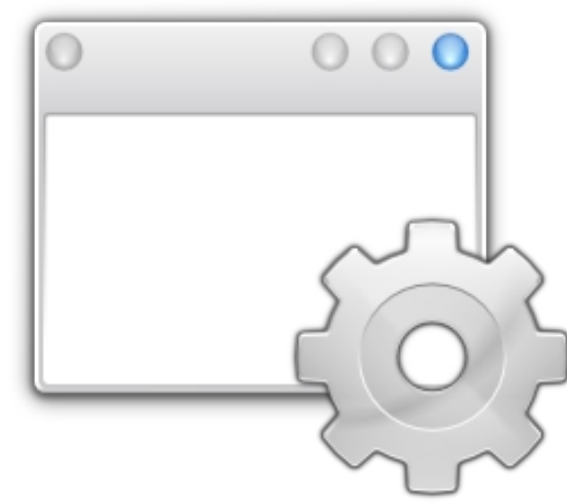
The publication-based approach

- Articles and software are two closely interconnected facets of modern mathematical research:

Publications contain the mathematical knowledge that is needed to build mathematical **software** (concepts, theorems, algorithms, convergence analysis).



Mathematical software, in turn, can be used to illustrate new mathematical results and lead to new findings, giving rise to **new publications**.



- swMATH therefore treats mathematical software and publications in a **combined manner**:
 - semi-automatic detection of software-relevant articles by means of heuristic tools
 - systematic collection of article references for every software package in swMATH
 - collection and evaluation of article metadata to obtain additional information on software
- At the moment, only publications referenced in the **zbMATH** database are considered.

swMATH online

- The swMATH prototype is available at: <http://www.swmath.org>
- The release date of the official web application is December 2013.
- Currently the database contains **≈5,500 software packages** with references to **≈50,000 articles**.
- Technical information:
 - PostgreSQL database with search text search module
 - Django web framework
 - HTML5 / JavaScript with jQuery

Software detail page (e.g. for SINGULAR software)

Search mask

Software name

Short description

Link to ORMS software service

Keyword cloud (auto-generated from article keywords)

List of relevant articles with links to zbMATH

Main site navigation

Basic software metadata

List of similar software packages (auto-generated from article metadata)

Search for articles

Article filter

Diagram showing the publication activities around this software

Links to other relevant publication collections

How to contribute?

Building a fairly complete database of mathematical software is a very difficult task.

We therefore kindly ask you to **support us** by...

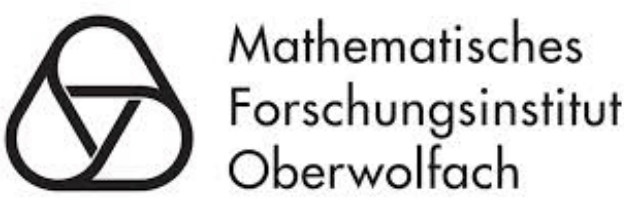
- ...providing us with feedback on swMATH
- ...contributing missing software packages
- ...adding or correcting information on software packages
- ...pointing colleagues to our service
- ...participating in our online survey at <https://de.surveymonkey.com/s/swMATH-survey>

swMATH online:
<http://www.swmath.org>
Contact and information:
contact@swmath.org

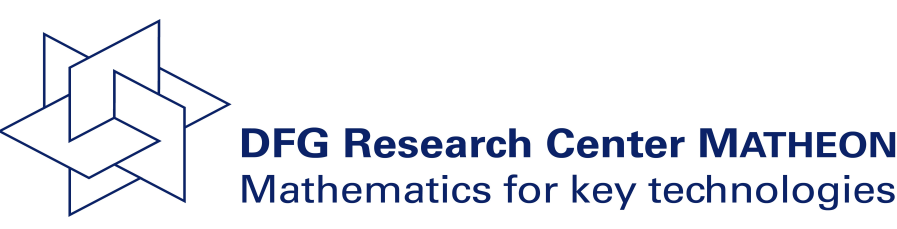
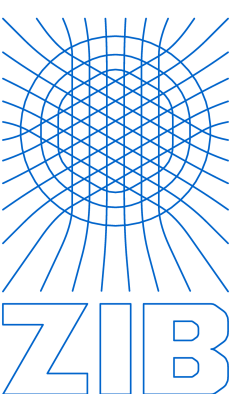
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