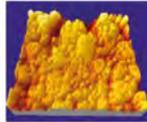
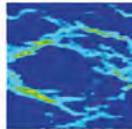




**Multi-scale**  
Modeling of microstructure,  
C3M



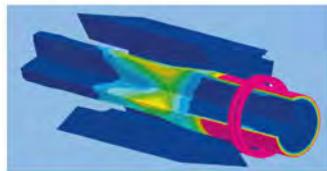
**Multi-scale**  
Modeling of lubricant flow,  
thermal and elastic properties  
of contact surface, IPPT



**Structural analysis**  
Limit-load  
optimization of  
structures,  
University of  
Ljubljana



**Multi-field**  
Modeling of coupled  
magneto-thermo-  
mechanical problem, C3M



**Multi-body**  
Modeling of fluid-structure interaction,  
C3M

## contact

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AceGen and AceFEM are supported by Wolfram Research, Inc. as a Third-Party Application Package (<https://www.wolfram.com/products/applications/>)

## About the Developers

Primal developer of the packages Prof. Jože Korelc is a professor of mechanics at the University of Ljubljana in Slovenia. He has published numerous articles on finite elements methods, automatic code generation, and the use of symbolic methods in engineering. Prof. Korelc is currently Head of the Division of Structures at the university's Faculty of Civil and Geodetic Engineering, President of the Slovenian Society of Mechanics, and Vice-president of the Central European Association of Computational Mechanics.

The development of the packages would not be possible without valuable contribution of institutions and individuals using the packages in everyday research, especially C3M, Center for Computational Continuum Mechanics, Ljubljana, Slovenia and IPPT, Institute of Fundamental Technological Research, Warsaw, Poland who also kindly contributed the presented examples.

## Purchasing

The packages can be purchased directly ([simech.fgg.uni-lj.si/Purchasing.htm](http://simech.fgg.uni-lj.si/Purchasing.htm)), online through Wolfram Research, Inc. ([www.wolfram.com](http://www.wolfram.com)) or through any of the Wolfram Research local representatives and resellers.

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On-demand numerical code generation and finite element analysis

# AceGen

Multi-language, Multi-environment  
Numerical Code Generation

# AceFEM

The Mathematica Finite  
Element Environment

# AceShare

Finite Element  
File Sharing



Vertrieb durch:  
ADDITIVE Soft- und Hardware für Technik und Wissenschaft GmbH  
Max-Planck-Straße 22b • 61381 Friedrichsdorf  
<http://www.additive-mathematica.de> • eShop: <http://eshop.additive-net.de>  
Verkauf: +49-6172-5905-30 • [mathematica@additive-net.de](mailto:mathematica@additive-net.de)

# AceGen

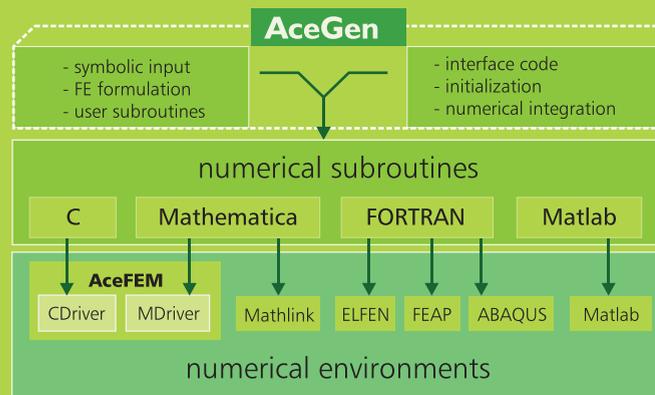
Multi-language,  
Multi-environment  
Numerical Code  
Generation



The Mathematica package AceGen is used for the automatic derivation of formulae needed in numerical procedures. With Mathematica and its support for multiple languages and environments, AceGen enables the generation of numerical code for a variety of systems from the same symbolic description.

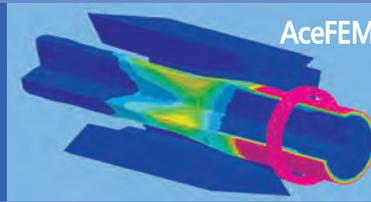
Key features:

- simultaneous derivation of expressions, global optimization of expressions and generation of program structure
- automatic selection of the appropriate intermediate variables
- forward and backward mode of automatic differentiation technique
- multi-language code generation (Fortran/Fortran90, C, Mathematica® language, Matlab® language), the generated codes are highly efficient and portable
- automatic interface to general environments (MathLink connection to Mathematica, Matlab®) and specialized FEM environments (AceFEM®, FEAP®, ELFEN®, ABAQUS®,...)



# AceFEM

The Mathematica  
Finite Element  
Environment



The AceFEM package is a general finite element environment designed to solve multi-physics and multi-field problems. The package explores the advantages of symbolic Mathematica's abilities while maintaining numerical efficiency of commercial FE environments.

Key features:

- hybrid symbolic-numeric FE environment
- element oriented approach offers easy creation of customized FEM-based applications in Mathematica.
- AceFEM combines use of Mathematica's features with external handling of intensive computations by compiled modules
- support for web-based FEM allows the user to compute and visualize results directly from a web browser through webMathematica
- parallel optimisation on grid-computing systems through gridMathematica
- build-in structured mesh generation and interface to GID® general preprocessor
- fast sparse solvers, exact sensitivity analysis, etc.
- open source FEM environment
- in combination with the automatic code generation package AceGen, the AceFEM package represents an ideal tool for a rapid development of new numerical models.

# AceShare

Finite Element  
File Sharing



The AceShare package is a file sharing system built in AceFEM that makes AceGen symbolic descriptions and generated finite element user subroutines available for other users to download over the Internet.

Key features:

- enables browsing and downloading the FE user subroutines from standard and third-party on-line libraries
- provides mechanism for the formation of the third-party libraries to be posted on the internet
- includes symbolic templates for direct sensitivity analysis of steady state, transient, coupled and coupled transient problems
- available libraries include AceGen templates and user subroutine source codes for solid, structural, thermal and contact FE for all supported environments (FEAP®, ELFEN®, AceFEM, AceFEM-MDriver, ABAQUS®, ...)

