

in collaboration with
Centro di Simulazione Numerica Avanzata – CeSNA
Istituto Universitario di Studi Superiori

Hands-on AceGen – AceFEM: a short course

Prof. Joze Korelc is the primal developer of the software systems AceGen and AceFEM for on-demand numerical code generation and finite element analysis. Please refer to <http://www.fgg.uni-lj.si/symech/>

The combination of the automatic code generation package **AceGen**, finite element libraries **AceShare** and the **AceFEM** finite element environment represents ideal collection of tools for a rapid development of new numerical models.

AceGen. Multi-language, Multi-environment Numerical Code Generation: the Mathematica package AceGen is used for the automatic derivation of formulae needed in numerical procedures. An approach, implemented in AceGen, avoids the problem of expression swell by combining: symbolic and algebraic capabilities of Mathematica, automatic differentiation technique, automatic code generation and simultaneous optimization of expressions. The multi-language capabilities of AceGen (C, FORTRAN, Mathematica®, Matlab®,...) enable generation of numerical codes for various numerical environments (AceFEM, Matlab®, FEAP®, ABAQUS®, ...) from the same symbolic description. AceGen alone does NOT include examples and libraries needed for the automation of the Finite Element Method.

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 advantages of symbolic capabilities of Mathematica while maintaining numerical efficiency of commercial finite element environments. The element oriented approach enables easy creation of customized finite element based applications in Mathematica. It also includes examples and libraries needed for the automation of the Finite Element Method.

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Thursday 24 November, 9.00-12.00
MS1 Conference Room,
Department of Structural Mechanics,
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Interested people are suggested to come with their own laptop with Mathematica installed.