

Preface

Advanced Finite Element Technologies are essential for the solution of almost all problems in computational mechanics. One of the great attractions of the finite element method is its enormous range of applicability, which varies from classical subjects like mechanical, aerospace, automotive, and civil engineering, to new scientific disciplines like information technology, applied physics, or biomechanics. Due to the substantial developments in several fields, as for instance materials science, production methods or optimization processes, many engineering and mathematical approaches for novel finite elements were developed during the last decades. The growing demand for reliable, accurate, and highly efficient finite elements particularly in the field of nonlinearities has led to a number of interesting finite element formulations.

The CISM course on “Advanced Finite Element Technologies”, held in Udine from October 6 to 10, 2014, was addressed to master students, doctoral students, postdocs, and experienced researchers in engineering, applied mathematics, and materials science who wished to broaden their knowledge in e.g. advanced mixed Galerkin and least-squares FEM, discontinuous Galerkin methods as well as the related mathematical analysis.

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