

One-Dimensional Finite Elements

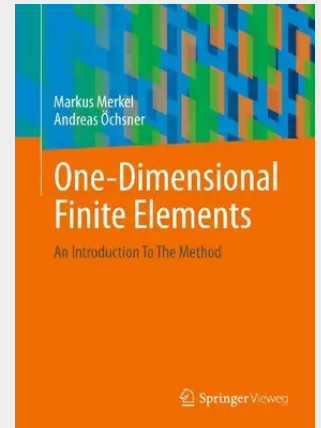
An Introduction To The Method

The basic idea of this introduction to the finite element method is based on the concept of explaining the complex method using only one-dimensional elements. Thus, the mathematical description remains largely simple and straightforward. The emphasis in each chapter is on explaining the method and understanding it itself. The reader learns to understand the assumptions and derivations in various physical problems in structural mechanics and to critically assess the possibilities and limitations of the finite element method.

The restriction to one-dimensional elements thus enables the methodical understanding of important topics (e.g. plasticity or composite materials), which a prospective computational engineer encounters in professional practice, but which are rarely treated in this form at universities. Thus, an easy entry - also into more advanced application areas - is ensured by the concept of (a) introduction to the basics (b) exact derivation with restriction to one-dimensional elements (and in many cases also to one-dimensional problems) (c) extensive examples and advanced tasks (with short solution in the appendix).

For illustration purposes, each chapter is deepened with extensively calculated and commented examples as well as with further tasks including short solutions

New and catchy entry with only one-dimensional elements Approach to methodology intuitive yet scientifically accurate With many examples, further tasks and short solutions



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