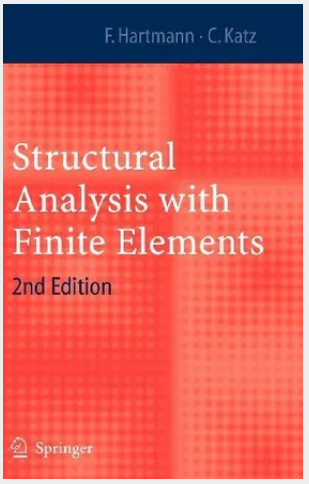
Hartmann / Katz

Structural Analysis with Finite Elements

Structural Analysis with Finite Elements, 2 Edition provides a solid introduction to the foundation and the application of the finite element method in structural analysis. It offers new theoretical insight and practical advice on why finite element results are 'wrong,' why support reactions are relatively accurate, why stresses at midpoints are more reliable, why averaging the stresses sometimes may not help or why the equilibrium conditions are violated. This second edition contains additional sections on sensitivity analysis, on retrofitting structures, on the Generalized FEM (X-FEM) and on model adaptivity. An additional chapter treats the boundary element method, and related software is available at www.winfem.de.

Structural Analysis with Finite Elements develops the foundations and applications of the finite element method in structural analysis in a language which is familiar to structural engineers and based on a foundation that enables structural engineers to address key questions that arise in computer modelling of structures with finite elements. At the same time, it uncovers the structural mechanics behind the finite element method. This innovative text explores and explains issues such as: why finite element results are 'wrong,' why support reactions are relatively accurate, why stresses at midpoints are more reliable, why averaging the stresses sometimes may not help or why the equilibrium conditions are violated. An additional chapter treats the boundary element method, and related software is available at www.winfem.de.



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