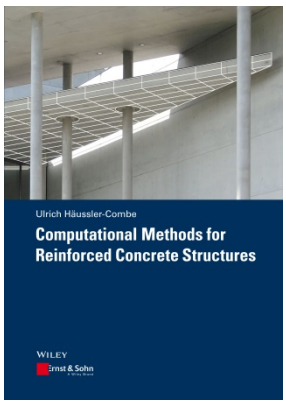
Press Release

22. October 2014



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Ulrich Häussler-Combe

Computational Methods for Reinforced Concrete Structures

The book gives a compact review of numerical methods and a description of material behavior. These basics are applied to bars, beams, strut and tie models, plates, slabs and shells. Examples are developed for each structural type, and may be reproduced by open source software.

Most problems are illustrated by examples which are solved by the program package ConFem, based on the freely available Python programming language. The ConFem source code together with the problem data is available under open source rules at concrete-fem.com.

The book gives a compact review of finite element and other numerical methods. The key to these methods is through a proper description of material behavior. Thus, the book summarizes the essential material properties of concrete and reinforcement and their interaction through bond. These basics are applied to different structural types such as bars, beams, strut and tie models, plates, slabs and shells. This includes prestressing of structures, cracking, nonlinear stress-strain relations, creeping, shrinkage and temperature changes.

Appropriate methods are developed for each structural type. Large displacement and dynamic problems are treated as well as short-term quasi-static problems and long-term transient problems like creep and shrinkage.

The author aims to demonstrate the potential and the limitations of numerical methods for simulation of reinforced concrete structures, addressing students, teachers, researchers and designing and checking engineers.

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