

Numerical approaches for the design of fibre reinforced concrete structures

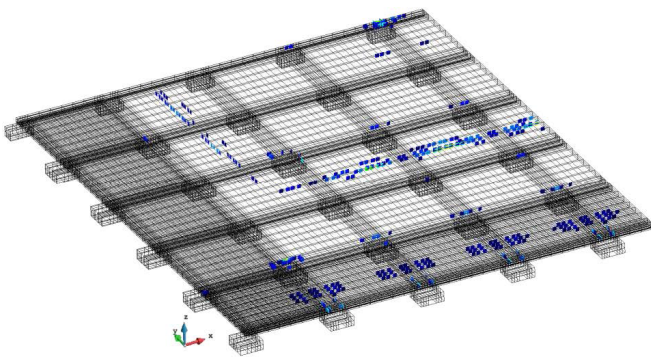
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To mobilize the main benefits of fibre reinforcement in the design of fibre reinforced concrete structures, material nonlinear models, capable of simulating the fibre reinforcement mechanisms should be used. Some of these models are presented, and their potentialities and debilities are discussed. The challenges faced to determine reliable values for the main parameters defining the constitutive laws of these models are also treated. Finally, one of these models is used to design representative structures where fibre reinforcement has technical and economic advantages.



Prof. Joaquim A. O. Barros

Research interests: structural strengthening, composite materials, fiber reinforced concrete and the development of constitutive models for the simulation of the behavior of cement based and polymer based materials, and their implementation in software based on the finite element method (FEM). He participated in 44 research projects (24 as coordinator).

- Full Professor of the Department of Civil Engineering of Minho University
- Director of the PhD in Civil Engineering, and coordinator of the Structural Composites Group
- Fellow of American Concrete Institute (ACI), and voting member of ACI Technical Committees
- Member of Technical Committees of the International Federation for Structural Concrete (fib)
- Member of International Union of Laboratories and Experts in Construction Materials, Systems and Structures – RILEM
- Founder of the CiviTest Company (www.civitest.pt)
- Co-inventor of the national patents PT116162, 107111 and 108615
- Co-inventor of the international patents 108611 and EP21177011.0
- Author of more than 800 scientific papers (>215 in ISI journals), conference proceedings and monographs