

Preface

Over the last decades powerful numerical methods have been developed to carry out one of the oldest and most important tasks of design engineers, which is to determine the load carrying capacity of structures and structural elements. Particularly attractive among these methods are the so-called “Direct Methods”, embracing Limit—and Shakedown Analysis because they allow rapid and direct access to the requested information in mathematically constructive manners without cumbersome step-by-step computation.

This collection of papers is devoted to this subject. It is the outcome of a workshop hosted by the University of Reggio Calabria in October 2013, in line with previous workshops at RWTH-Aachen University, University of Technology and Sciences of Lille, and National Technical University of Athens and give an excellent insight into the state of the art in this broad and growing field of research.

The individual contributions stem namely from the areas of new numerical developments rendering the methods more attractive for industrial design, extensions of the general methodology to new horizons of application, probabilistic approaches and specific technological applications. The papers are arranged in the order as presented in the workshop.

It might be worth noting that the success of the workshops and the growing interest in Direct Methods in the scientific community were motivations to create the association IADiMe (<http://www.iadime.unirc.it/>) as a platform for exchange of ideas, advocating scientific achievements and not least, promotion of young scientists working in this field. It is open for all interested researchers and engineers.

The editors warmly thank all the scientists who have contributed by their outstanding papers to the quality of this edition.

—We hope you enjoy reading it!

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Aachen

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Direct Methods for Limit and Shakedown Analysis of
Structures

Advanced Computational Algorithms and Material
Modelling

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