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Nota di contenuto	Evaluation of human bones bearing capacity with the Limit Analysis Theory -- The linear matching method and its software tool for creep fatigue damage assessment -- Limit analysis of complex 3D steel structures using second-order cone Programming -- Limit fire analysis of 3D framed structures based on time-dependent yield surfaces -- Limit analysis of dry masonry block structures with non-associative Coulomb friction -- Homogenization of ductile porous materials by Limit and Shakedown Analysis -- Recent updates of the Residual Stress Decomposition Method for Shakedown Analysis -- Stress compensation method for shakedown analysis and its engineering applications -- On cyclic steady states and elastic shakedown in diffusion-induced plasticity -- Numerical method for quasi-static and dynamic elastoplastic problems by symplectic Brezis-Ekeland-Nayroles non-incremental principle -- Shakedown limits of slab track substructures and their implications for design -- Investigations of Shakedown in the Presence of Ambient Creep using Direct Methods for High Strength

Steel under Multiaxial Loadings.

Sommario/riassunto

This book provides an overview of direct methods such as limit and shakedown analysis, which are intended to do away with the need for cumbersome step-by-step calculations and determine the loading limits of mechanical structures under monotone, cyclic or variable loading with unknown loading history. The respective contributions demonstrate how tremendous advances in numerical methods, especially in optimization, have contributed to the success of direct methods and their practical applicability to engineering problems in structural mechanics, pavement and general soil mechanics, as well as the design of composite materials. The content reflects the outcomes of the workshop “Direct Methods: Methodological Progress and Engineering Applications,” which was offered as a mini-symposium of PCM-CMM 2019, held in Cracow, Poland in September 2019.