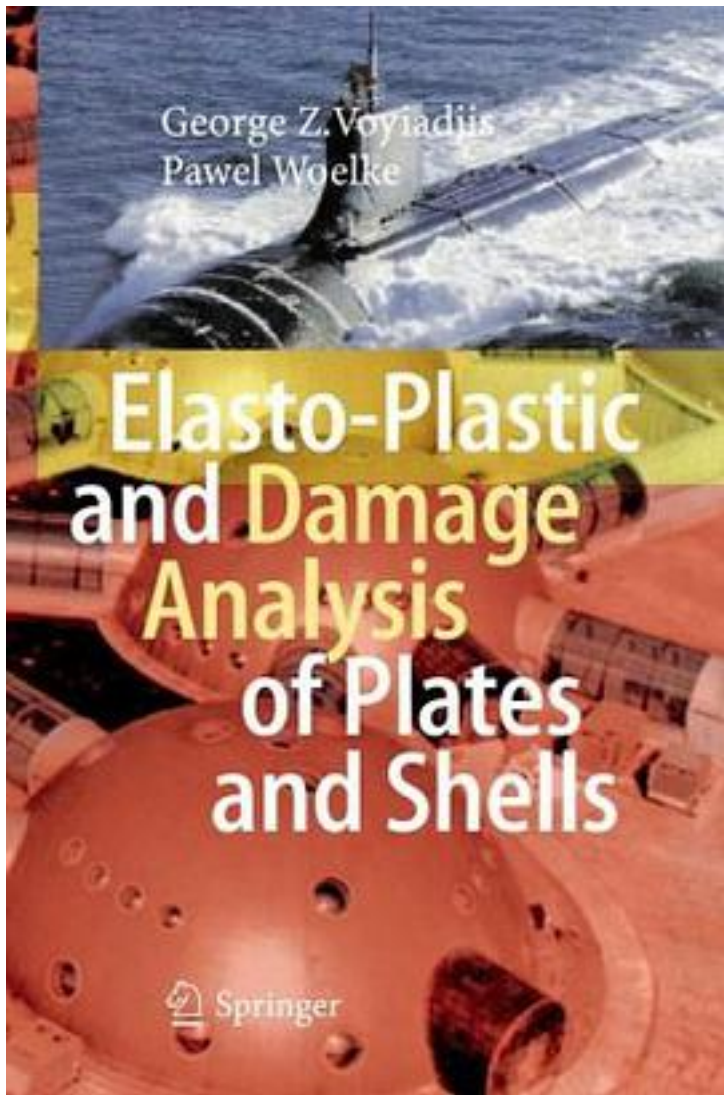


# Elasto-Plastic and Damage Analysis of Plates and Shells



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This book presents a finite element model for the elasto-plastic and damage analysis of thin and thick shells. Linear elastic, inelastic and softening behaviors caused by damage in structural shells, as well as large rotations are investigated. The textbook is addressed to graduate students and researchers in civil, mechanical and aerospace engineering as well material scientists and applied mechanics. The formulation presented here was developed primarily for large scale structural analyses. Special emphasis is therefore placed in computational efficiency. Despite ever increasing capabilities of nowadays computers, small scale constitutive models are hardly ever applicable to analysis of large structures. This book provides a constitutive model which allows for accurate representation of the non-linear shell behavior up to failure, while offering high efficiency and applicability to large scale structural analyses. This is achieved by representing the elasto-plastic behavior by means of the non-layered approach, with an updated Lagrangian method used to describe the geometric non-linearities. For the treatment of material non-linearities an Iliushina (TM)s yield function expressed in terms of stress resultants is adopted, with isotropic and kinematic hardening rules. Damage effects modeled through the evolution of porosity are incorporated into the yield function, giving a generalized and convenient yield surface expressed in terms of the stress resultants.

作者介绍:

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