论文

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弹塑性有限元分析的凝缩法

任其全

中国科学院力学研究所

FINITE ELEMENT ANALYSIS OF ELASTIC-PLASTIC MATERIALS BY "CONDENSED APPROACH"

Ren Qiquan

Institute of Mechanics, Academia Sinica

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摘要 本文提出了弹塑性有限元分析的一种新方法——"弹塑性有限元分析的凝缩法"。按这种方法对结构进行弹塑性计算,与普通方法相比,可以大量缩短计算时间,从而取得明显的经济效益。

关键词：

Abstract： A new approach, "condensed approach", is proposed for the finite element analysis of elastic-plastic materials. The total domain of the structure is divided into two regions. One is an elastic region and another is a mixed region of a plastic region blended with some elastic elements. The effects of the elastic region on the mixed region are expressed by equivalent general forces acting on the boundary nodes between the two regions. So the elastic-plastic analysis may be considered only in the mixed region. Because the mixed region is considerably smaller than the elastic region in general, a great deal of operation time to form the general stiffness matrix repeatedly and to solve the equations is saved and computation cost is cut down greatly. Some examples are given in illustra-tion of the approach.

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