Minimum Principles of Piecewise Linear Isotropic Plasticity

P. G. HODGE, JR.

Communicated by R. S. RIVLIN

Summary

A theory of plasticity is considered in which the yield function is a piecewise linear function of the stresses, the flow law is based on the plastic potential, and the strain-hardening is isotropic and linear. First, the flow law at a "corner" of the yield function is investigated in detail. Next, it is shown that the flow law at all points can be piecewise integrated to obtain some of the advantages of a deformation theory. Finally, two classical minimum principles of elasticity are extended to include certain cases of piecewise linear plasticity.

The results presented in this paper were obtained in the course of research sponsored by the Office of Naval Research. Reproduction in whole or in part is permitted for any purpose of the United States Government.