

عنوان مقاله:

Application of a Generalized Isotropic Yield Criterion to Determining Limit Load Solutions for Highly Undermatched Welded Bars in Tension

محل انتشار:

مجله مکانیک کاربردی و محاسباتی، دوره 10، شماره 3 (سال: 1403)

تعداد صفحات اصل مقاله: 12

نویسندگان:

Sergei Alexandrov - Ishlinsky Institute for Problems in Mechanics RAS, ۱-۱-۱ Prospect Vernadskogo, Moscow, ۱۱۹۵۲۶, Russian Federation

Stanislav Strashnov - Department of Applied Informatics and Intelligent Systems in Humanities, RUDN University, ۶ Miklukho-Maklaya St, Moscow, ۱۱۷۱۹۸, Russian Federation

Yong Li - School of Mechanical Engineering and Automation, Beihang University, No. ۳۷ Xueyuan Road, Beijing, ۱۰۰۱۹۱, China

خلاصه مقاله:

The limit load is an important input parameter of analytical flaw assessment procedures. The accuracy of limit load solutions affects the accuracy of these procedures. The present paper evaluates the influence of a class of the work functions involved in the upper bound theorem on the upper bound limit load of a round highly undermatched tensile bar. It is assumed that the weld contains a crack. The boundary value problem is axisymmetric. The work functions considered cover the entire range of physically reasonable yield criteria, assuming the material is isotropic and incompressible. The kinematically admissible velocity field chosen accounts for some features of the real velocity field. In particular, the kinematically admissible velocity field is singular near the interface between the base material and weld. As a result, the new solution predicts a more accurate limit load than available solutions for the von Mises and Tresca yield criteria. Moreover, the effect of the generalized yield criterion associated with the work functions above on the limit load is shown

کلمات کلیدی:

limit load, upper bound theorem, highly undermatched structure, generalized yield criterion

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/2045578>

