Direct Determination of Asymptotic Structural Postbuckling Behaviour by the finite element method.

Direct Determination of Asymptotic Structural Postbuckling Behaviour by the finite element method.

Application of the finite element method to Koiter's asymptotic postbuckling theory often leads to numerical problems. Generally it is believed that these problems are due to locking of non-linear terms of different orders. A general method is given here that explains the reason for the numerical problems and eliminates these problems. The reason for the numerical problems is that the postbuckling stresses are inaccurately determined. By including a local stress contribution, the postbuckling stresses are calculated correctly. The present method gives smooth postbuckling stresses and shows a quick convergence of the postbuckling coefficients. (C) 1998 John Wiley & Sons, Ltd.

General information
Publication status: Published
Organisations: Department of Structural Engineering and Materials
Contributors: Poulsen, P. N., Damkilde, L.
Pages: 685-702
Publication date: 30 Jun 1998
Peer-reviewed: Yes

Publication information
Volume: 42
Issue number: 4
ISSN (Print): 0029-5981
Original language: English
Keywords: asymptotic postbuckling, stability, finite element method, smooth stresses
DOI: 10.1002/(SICI)1097-0207(19980630)42:4<685::AID-NME381>3.0.CO;2-9
Source: orbit
Source-ID: 170352
Research output: Contribution to journal › Journal article – Annual report year: 1998 › Research › peer-review