

Bloom, Frederick; Coffin, Douglas W.

Handbook of thin plate buckling and postbuckling. (English) Zbl 0979.74004

Boca Raton, FL: Chapman & Hall/CRC. 786 p. (2001).

The modern applied structural mechanics often looks really amazing. Ask the experts about any real problem, and you will get an answer of “it is already solved” or at least “it can be surely solved by FEM”. Nevertheless, it is a hard job to find such solution and to perform a thorough check of its validity. Moreover, any problem in question is overloaded with plenty of “simplified” or “sophisticated” theories and approaches without any hierarchy established. There upon a good reliable handbook is in a great demand and can play decisive role in further development of this branch of mechanics.

The system of classification, i.e. the arrangement of issues, is of most importance. Dealing with buckling and postbuckling of thin plates, the authors of this handbook point out the key physical and geometric factors of the processes considered: aspect ratios, boundary and load conditions, material symmetry and constitutive behaviour, initial imperfections, and secondary buckling. The authors present a significant source information, giving the results in comparison and often in generalized, ready-to-use form, which makes them useful not only for solving practical problems of design and engineering, but also for testing newly invented analytical and numerical algorithms. Finally, the explicitly placed list of unsolved problems makes it handy for tutorial and research work in high school practice.

On balance, this well-written book is a reader-friendly and good-organised handbook in the field of buckling and postbuckling of thin plates. It can be highly recommended to experts in mechanics of thin-walled structures as well as to engineers.

Reviewer’s remark: It seems to me that authors would continue their work or improve the handbook. It may be suggested that a description of newly invented analytical and numerical methods of investigation of buckling and postbuckling behavior of thin plates would be highly desirable. Such upgrade would make the handbook completely autonomous.

Reviewer: [Igor Andrianov \(Köln\)](#)

MSC:

[74-02](#) Research exposition (monographs, survey articles) pertaining to mechanics of deformable solids

Cited in **15** Documents

[74K20](#) Plates

[74G60](#) Bifurcation and buckling

Keywords:

plate; buckling; bifurcation; elasticity; plasticity; postbuckling; secondary buckling; boundary conditions; geometric factors; aspect ratios; load conditions; material symmetry; initial imperfections