

## Geometrical aspects of the nonlinear stability of elastic shells(\*)

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DESPITE the fact that more than 200 years have elapsed since the stability problems started to be a subject of investigations, phenomena of stability of elastic systems are still far from being fully explained. The present paper deals with the most important of them.

The first not yet fully explained fact is the lack of effectiveness of the linear stability theory of elastic shells. The theory which has proved to be efficient in the cases of beams and plates shows considerable lack of effectiveness in some problems of shell stability. Scientists concerned with the stability of shells have not so far explained the causes of this fact. They just state the necessity of applying a nonlinear stability approach.

The second unsolved problem consists in mode unpredictableness of the stability loss. This in turn makes impossible determination of exact critical load even from a nonlinear theory.

The third important problem consists in appropriate assumption of stability criterion. Existing criteria in linear and nonlinear theories are based on investigation of equilibrium path relating load to deformation. It is shown in the paper that non-linearity requires more precise considerations consisting in taking into account not only the mentioned path but also its neighborhood.

Finally, the fourth problem which remains still open and is related to previous ones is the lack of effective method of investigation of nonlinear loss of stability of shells based on theoretical considerations only.

In the present paper an attempt is made to explain the above problems.

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