Dynamic stability of columns under nonconservative forces: theory and experiment

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Abstrak

This book treats dynamic stability of structures under nonconservative forces. It is not a mathematics-based, but rather a dynamics-phenomena-oriented monograph, written with a full experimental background. Starting with fundamentals on stability of columns under nonconservative forces, it then deals with the divergence of Eulers column under a dead (conservative) loading from a view point of dynamic stability. Three experiments with cantilevered columns under a rocket-based follower force are described to present the verifiability of nonconservative problems of structural stability. Dynamic stability of columns under pulsating forces is discussed through analog experiments, and by analytical and experimental procedures together with related theories. Throughout the volume the authors retain a good balance between theory and experiments on dynamic stability of columns under nonconservative loading, offering a new window to dynamic stability of structures, promoting student- and scientist-friendly experiments.