

**Scheidl, R.; Troger, H.; Zeman, K.**

**Coupled flutter and divergence bifurcation of a double pendulum.** (English) Zbl 0563.70024  
*Int. J. Non-Linear Mech.* 19, 163-176 (1984).

The loss of stability of the equilibrium position of a double pendulum with follower force loading and elastic end support is studied. At a special parameter combination the linearized system is characterized by a zero root and a pure imaginary pair of eigenvalues. Therefore, the stability problem is a complicated critical case in the sense of Liapunov and requires a nonlinear analysis. A complete post-bifurcation investigation of the coupled divergence and flutter motions is given by means of centre manifold theory, and bifurcation diagrams. Among the different types of motions even the appearance of chaotic behavior is shown.

**MSC:**

**70K20** Stability for nonlinear problems in mechanics

Cited in **6** Documents

**Keywords:**

double pendulum; follower force loading; elastic end support; zero root; pure imaginary pair of eigenvalues; post-bifurcation investigation; coupled divergence and flutter motions; centre manifold theory; bifurcation diagrams; chaotic behavior

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