Texas Tech University. Applied Mathematics Seminar.

STABILITY ANALYSIS OF INHOMOGENEOUS EQUILIBRIUM FOR AXIALLY AND TRANSVERSELY EXCITED NONLINEAR BEAM

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ABSTRACT.In this work we consider the dynamical response of a non-linear beam with viscous damping, perturbed in both the vertical and axial directions. The system is modeled using coupled non-linear momentum equations for the axial and transverse displacements. In particular we show that for a class of boundary conditions (beam clamped at the extremes) there exists an appropriate energy norm depending on the beam displacements and bounded by applied load.