

An Overview of Targeted Energy Transfer Phenomena in Coupled Oscillators: Theoretical and Experimental Results and System Identification

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We present recent theoretical and experimental results related to targeted energy transfers (TETs) in systems of strongly nonlinear coupled oscillators. After briefly presenting the basic dynamical mechanisms governing these strongly nonlinear phenomena, we provide applications of TETs to problems of aeroelastic flutter suppression, and of shock isolation of elastic continua. Some recent ideas related to order reduction of complex phenomena involving nonlinear resonant interactions will also be presented, and the foundations of a nonparametric nonlinear system identification method of quite wide applicability will be discussed.