

Resonances of nonlinear mechanical systems: a nonlinear normal mode perspective

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Abstract

The concept of resonance is central in structural dynamics, because the maximum amplitude at which a system or a product vibrates occurs at resonance frequencies. Unlike linear systems, nonlinear systems can exhibit different types of resonances including fundamental, internal or isolated resonances. In this presentation, we show how nonlinear modal analysis, and specifically, the numerical computation of nonlinear normal modes, can be exploited for uncovering and understanding nonlinear resonances.

Keywords: structural dynamics, nonlinear systems, nonlinear modal analysis, nonlinear resonances
