

Department of Ocean and Resources Engineering
Seminar

Nonlinear dynamics in the motion of moored floating systems

by

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Monday, April 11, 2005, 3:30 PM, MSB 114

Abstract

Offshore systems often exhibit distinctly nonlinear phenomena. Even when considering an idealized excitation due to periodic waves, they show responses ranging from harmonic or subharmonic to chaotic motion. Depending on the system's parameters, these different types of responses can be coexisting, which makes the initial conditions crucial for the steady state response.

Different models of a moored barge and a moored floating crane are considered, which both reveal multiple attractors for purely periodic forcing. When including a random disturbance, the system's response reveals some similarities but also significant differences as compared to the idealized periodic case. The talk addresses advantages and limitations of the underlying models and the applied mathematical techniques.