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Multiple resonance in coupled Duffing oscillators and Nonlinear Normal Modes ROSTY MARTINEZ, Oklahoma State University-Stillwater, CARLOS VASQUEZ, Universidad Simon Bolivar — We study the dynamical behavior of chains of linearly coupled Duffing oscillators, driven by a sinusoidal force acting on the first slab. General analytical solutions for resonance curves for a chain of N coupled Duffing oscillators are presented and discussed. For a system of two coupled oscillators, analytical resonance curves are completely depicted for high values of stiffness ($\gamma > 20$). Furthermore, resonant nonlinear normal modes (NNM) of quasi-periodic oscillations, are found within hysteresis regions, and theoretically characterized through a suitable closed expression.

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