Abstract Submitted
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Changes in Routes to Chaos with Increasing Number of Degrees of Freedom[1] ZDZISLAW MUSIELAK, University of Texas at Arlington — There are at least five basic routes to chaos discovered in low-dimensional dynamical systems. To investigate routes to chaos in higher-dimensional systems, generalized Lorenz models and coupled Duffing oscillators were considered. The generalized Lorenz models with dimensions ranging from four to nine were constructed by taking into account higher-order modes in doubled Fourier expansions of a stream function and temperature variations. Degrees of freedom were added to the original Duffing system by coupling two, three, four, five and six non-linear oscillators together. The obtained results show that routes to chaos in these systems significantly change when the number of degrees of freedom is increased. Physical implications of these result will be discussed.

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