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Falling of a plate with eccentric center of mass SEAN COUGHENOUR, HUI WAN, University of Colorado, Colorado Springs — The problem of a freely falling object is of interest in both fluid mechanics and nonlinear dynamics. Four types of motions have been observed, i.e., steady falling, flutter, tumble, and chaotic motion, depending on the body moment of inertia and the Reynolds number. For example, at high Reynolds number, flutter and tumble motion are obtained for bodies with small and large moment of inertia, respectively. Most of previous studies focused on the symmetric body with mass center collocated with the geometric center. In this study, we will numerically study the falling of a plate with eccentric center of mass. We will also adjust the center of the mass and thus change the moment of inertia and the angular velocity of body rotation, therefore enabling a new methodology to actively control the plate falling trajectories.

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