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DYNAMICS OF A DAMPED PENDULUM

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Abstract

The addition of damping to the equation of motion of a damped pendulum produced an interesting behavior. The ratio of frequency of motion ☐ and the ratio of the added damping strength to the velocity dependent damping one were varied through certain ranges.

Introduction

Since 1963 interest in irregular behavior of dynamical systems has grown exponentially in so many disciplines [1]. The existence of "stable" aperiodic solutions in appacently simple deterministic systems sharply conflicts with the expectations that have developed from studies of linear physical system. Our conventional training suggests about the order and regularity is not anomalous but also conflicts with many of the concepts ones.

A dynamical system which models the interaction of competing periodicities and frequency locking in wide variety of physical systems is the equation describing the damped driven pendulum. The particular system has some isomorphism to a current-biased Josephson junction frequency driven [2].

The subject of dynamical properties of a damped pendula, so long relegated to undergraduate mechanics course, has a new currency since the discovery of chaos in pendulum have received attention in recent years[3].

We in this article are extending the work of Smith and Blackburn [4] by introducing an extra non lasting complex damping to the equation of motion of the simple non driven pendulum.