

Abstract Submitted
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Positional Dependent Driving Torque in the Damped, Driven Pendulum¹ TODD MCALPINE, Ohio Northern University, ALISON HUFF, The College of Wooster — We investigate the dynamics of a plane pendulum with positional dependent driving torque as would be produced by a horizontally directed force exerted on the pendulum bob. We compare this with the well known dynamics of a standard damped, driven plane pendulum. In particular we compare the bifurcation diagrams of the two systems to compare the effects of the driving amplitude on the dynamics. In the system with positional dependent driving torque, bifurcation begins at higher driving amplitudes and there is a repetitive structure in the bifurcation diagram at high driving amplitude. Additionally, with positional dependent driving torque we see continued chaotic behavior at high driving amplitude whereas the chaotic behavior of the standard pendulum dies out at large driving amplitudes.

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