

Abstract Submitted
for the APR08 Meeting of
The American Physical Society

Dipole-Dipole Interaction of a Non-Linear Pendulum VY TRAN, JASON RADEL, LAUREN EDGE, MARTIN JOHNSTON, University of Saint Thomas — We have studied the effect of adding a magnetic dipole to a chaotic pendulum. The dipole pendulum is subject to both gravitational and magnetic fields. The interplay between the shape of the potential well and the resulting motion is shown by Poincare sections in phase space and bifurcation diagrams in coefficient space. We have created computer models which integrate the differential torque equation. Using measured coefficients which describe the physical properties of the system and various drive frequencies, we have studied the correlation between predicted Poincare sections and experimental data. The fractal properties of the chaotic attractors in phase space have also been studied in an effort to quantify the complexity of the attractors.

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Date submitted: 11 Jan 2008

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