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Simulating a charged spherical pendulum in time-varying electric and magnetic fields[1] MARK WELLONS, FRANK KING, TODD MCALPINE, The College of Wooster — We simulate and analyze the dynamics of a charged spherical pendulum in time-varying electric and magnetic fields. The time-varying electric field is directed perpendicular to the gravitational field and serves as a driving force for the pendulum. The time-varying magnetic field is directed parallel to the gravitational field and serves to deflect the motion of the pendulum. We analyze the dynamics of the system to determine the conditions for which chaotic behavior is observed. We also include viscosity to look for strange attractors. The equations of motion are integrated using Objective C and the graphical user interface, including the three dimensional graphical representation of the system, is developed using Cocoa.

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