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Using MATCONT to Generate Bifurcation Plots for Chemical Systems

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Abstract : Bifurcation Analysis of a dynamical system calls for an interactive user friendly software. Dynamical systems involve differential equations and solving them analytically is tedious. So many software have been used but lately, MATCONT which is a continuation package of MATLAB with a graphical user interface is getting into trend. MATCONT can be used to study a variety of dynamical behavior including nonlinear behavior like steady state multiplicity, limit cycles, Hopf points, bifurcation plots, space plane, stability analysis etc. In this paper, this toolbox has been used to illustrate the nonlinear behavior exhibited by an electrochemical system. In particular, we consider an In^{3+}-HCN^{-} reaction at a hanging mercury Drop electrode as modeled by a system of two nonlinear differential equations.
Keywords: MATCONT, bifurcation analysis, electrochemical oscillators.

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