These are notes on how to uses .ode files CK.ode and CK2.ode to do a fast-slow analysis of the Chay-Keiser model (This analysis is due originally to Rinzel and Li.)

First make a phase plot for the reduced 2-variable "fast" system using CK2.ode. Also make a bifurcation diagram, showing steady state solutions and periodic orbits, plot as V vs. the parameter Ca. for the Chay-Keiser beta cell bursting model. To make an interesting diagram, first use CK2.ode to make a phase portrait for the reduced 2 variable "fast" system. Now, in the AUTO window, click on "File" and then "Write pts" and pick a file name such as ckDiagram.dat to save the bifurcation diagram for later use.

Now use file CK.ode to find time dependent solutions of the full equations, plotted in the V-Ca plane. Now click "Graphics Stuff", "Freeze", "Bif. Diag." and choose the previously saved file. The once more click "Graphics Stuff", "Freeze", and the two plots should show up superimposed.

Good luck!