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Paul von Dohlen* (vondohlenp@wpunj.edu) and **Patrick Miller**. *Evolving a Smooth Curve of Initial Conditions Under a Time-Dependent Two-Dimensional ODE.*

For a system of nonlinear ODEs we evolve a smooth curve of initial conditions under successive iterations of the flow map. A C^1 Hermite interpolant represents the curve at each time slice with the requisite derivative information carried forward using the linear variational equation. In this setting, the goal is to use error estimates for the interpolating polynomial to determine where additional knots need to be inserted and carried forward under the flow, as well as determining where knots might be removed when parts of the curve become over-resolved. In this presentation we assume that the representation of the curve is accurate and illustrate how the interpolating knots can be positioned more efficiently by solving a certain ODE associated with reparametrizing the curve. (Received September 21, 2009)