Timo Eirola and Jan von Pfaler: *Nmerical Taylor expansions for invariant manifolds*; Helsinki University of Technology Institute of Mathematics Research Reports A460 (2003).

Abstract: *We consider numerical computation of Taylor expansions of invariant manifolds around equilibria of maps and flows. These are obtained by writing the corresponding functional equation in a number of points, setting up a nonlinear system of equations and solving that using a simplified Newton's method. This approach will avoid symbolic or explicit numerical differentiation. The linear algebra issues of solving the resulting Sylvester equations are studied in detail.*

AMS subject classifications: 65Q05 65P, 37M, (secondary) 65P30, 65F20, 15A69

Keywords: numerical approximation of invariant manifolds, multivariate polynomial, bifurcation, Taylor expansion

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