1086-65-1271 **Jehanzeb H Chaudhry*** (jehanzeb.hameed@gmail.com), 101 Weber Building, Colorado State University, Fort Collins, CO 80523, and **Don Estep** (estep@stat.colostate.edu), **Simon Tavener** (tavener@math.colostate.edu) and **Victor Ginting** (vginting@uwyo.edu). *An a Posteriori Analysis of Iterative Technique for System of Odes.*

We develop an adjoint-based a posteriori analysis for a class of explicit numerical schemes that can involve a fixed-point type iteration of the original system of ordinary differential equations. Contrary to the usual implicit techniques where the adjoint are readily available, there are certain preparatory stages that need to be accomplished before an adjoint is available. The crucial step in this case is on casting the fixed-point type iteration into an implicit-like scheme after which the adjoint equation is derived. The resulting estimator decomposes the error into distinct components like iterative and discretization error. We show results for a variety of problems, including equations with time varying coefficients and partial different equations. We also apply our analysis techniques to a class of implicit schemes which utilize iterative linear solvers. (Received September 20, 2012)