

1067-Z1-1574

Brandon Chabaud* (chabaud@math.psu.edu), Pennsylvania State University, Mathematics Dept., 109 McAllister Bldg., University Park, PA 16802, and **Qiang Du**. *A mixed implicit-explicit multirate numerical scheme for time-dependent equations.*

We develop a multirate time integration method for systems of time-dependent equations that present two significantly different scales within the model. We use an iteration scheme to decouple the two time scales. At each iteration, we use an implicit Galerkin method to solve for the fast scale variable and an explicit method to solve for the slow variable. The error equation consists of a computable leading order term and a provably higher order expression. (Received September 21, 2010)