1035-35-1447   **Champike Attanayake*** (`cattana@bgnet.bgsu.edu`), Department of Mathematics and Statistics, Bowling Green State University, Bowling Green, OH 43403. *Long-time Error Estimation for the Extended Fisher-Kolmogorov Equation.*

We consider the numerical solution of the extended Fisher-Kolmogorov (EFK) equation

$$u_t + \gamma \Delta^2 u - \Delta u = u - u^3$$

which has many applications, such as pattern formulation in bi-stable systems, traveling waves in reaction diffusion systems and phase transition in binary systems. We discuss long-time error analysis for the EFK equation. Long-time error estimation for numerical solutions is very important for both the theory of numerical analysis and the practice of scientific computation. To investigate long-time error one has to carefully analyze error propagation. We carried out the error analysis using the stability-smoothing indicator, smoothing assumption, moving attractor and obtain an estimate uniform in time. Instead of numerical error propagation, which is usually referred as the stability of a numerical scheme, we consider exact error propagation, which only depends on the stability of the dynamical system associated to the differential equation. (Received September 19, 2007)