

1083-35-163

Donna S Stutson* (dstutson@xula.edu), Xavier University of Louisiana, 1 Drexel Dr., New Orleans, LA 70125, and **A. S. Vatsala**. *A Representative Formula for the One Dimensional Caputo Fractional Reaction Diffusion Equation and a numerical example using the Generalized Monotone Method.*

Here we will look at a representative formula for the one dimensional Caputo Fractional Reaction Diffusion Equation

$$\begin{aligned} {}^c\partial_t^q u - k \frac{\partial^2 u}{\partial x^2} &= f(t, x, u) + g(t, x, u) & (t, x) \in Q_T \\ u(t, 0) &= A(t), \quad u(t, L) = B(t) & (t, x) \in \Gamma_T \\ u(0, x) &= h(x) & x \in \bar{\Omega} \end{aligned}$$

where $\Omega = [0, L]$, $J = (0, T]$, $Q_T = J \times \Omega$, $k, > 0$ and $\Gamma_T = (0, T) \times \partial\Omega$. ${}^c\partial_t^q u$ is the Caputo Partial Derivative with respect to t of order q , $0 < q < 1$. A Numerical example is provided using the generalized monotone method. (Received August 27, 2012)